



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 20 2010

REPLY TO THE ATTENTION OF:
L-8J

David E. Stice
Corporate Attorney
Sinclair Oil Corporation
550 East South Temple
Salt Lake City, Utah 84102

Lisa K. Hodges
Environmental & Regulatory Affairs
The Valero Companies
One Valero Way
Post Office Box 696000
San Antonio, Texas 78269-6000

Lance S. Tolson
Shell Oil Company
Legal Services US
910 Louisiana
One Shell Plaza 1120
Houston, Texas 77002

Rebecca Raftery
BP America Inc.
Law Department
Mail Code 4 West
4101 Winfield Road
Warrenville, Illinois 60555

Douglas D. Hommert
Executive Vice President
and General Counsel
Apex Oil Company
8235 Forsyth Avenue - 4th Floor
St. Louis, Missouri 63105

Re: Hartford Area Hydrocarbon Site **RCRA-05-2010-0020**

Dear Addressees:

Enclosed please find a Unilateral Administrative Order issued by the U.S. Environmental Protection Agency ("U.S. EPA") under Section 7003 of the Resource Conservation and Recovery Act, 42 U.S.C. § 6973. This Order requires construction of certain infrastructure and performance of certain cleanup work in Hartford, Illinois. This work includes implementation of a pilot test in Area A, followed by continuous operation of a multiphase extraction system at that location, with management of recovered vapors and liquids at treatment facilities located east of the Village of Hartford.

For the past several months your companies, U.S. EPA, and the State of Illinois have engaged in settlement discussions relating to the Hartford Site. Issuance of this Order does not preclude settlement. If the parties were to enter into a settlement in the near future, the requirements of this Order could be integrated into a consent decree or otherwise addressed by

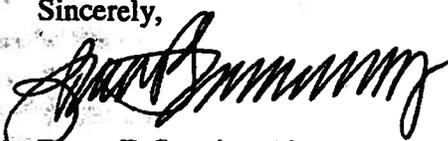
such a settlement. Therefore, assuming compliance with the requirements of this Order, U.S. EPA remains willing to discuss settlement.

In the absence of a settlement, U.S. EPA will issue enforceable directives in the next few weeks. Those directives will set forth the schedule for implementation of the remaining elements of the LNAPL Remedy and continuous implementation of other work such as interim measures. The exact nature and timing of those directives will be influenced by our experience in implementing this Order. While liability under Section 7003 of RCRA is joint and several, U.S. EPA is considering that at this Site efficient implementation of the work may be best achieved through assignment of certain tasks to specific parties. However, such assignments shall in no way diminish or otherwise affect any party's liability for this Site as a whole. Nor would any such assignment constitute a U.S. EPA allocation of costs for the Site. Finally, even if certain work is assigned to specific Respondents, implementation of this cleanup will require continuous cooperation amongst all Respondents.

Please note that the Order allows an opportunity for a conference, if requested within 3 business days after issuance of the Order. If no conference is requested, the Order provides an opportunity to submit comments within 7 business days of issuance of the Order.

If you have any questions regarding the Order, feel free to contact Brian Barwick, Associate Regional Counsel, at (312) 886-6620.

Sincerely,



Bruce F. Sypniewski
Acting Director
Land and Chemicals Division

Enclosure

cc: Kevin Turner, USEPA
Michelle Kaysen, USEPA
Jeffrey Spector, USDOJ
Randall Stone, USDOJ
John Waligore, IEPA
Jim Morgan, IAG



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

VIA UPS Overnight

REPLY TO THE ATTENTION OF:

L-8J

JUL 20 2010

Illinois Corporation Service Company
801 Adlai Stevenson Drive
Springfield, Illinois 62703

Re: Unilateral Administrative Order for the Hartford Area Hydrocarbon Site (your client Sinclair Oil Corporation)

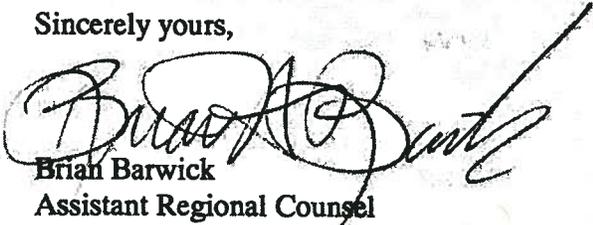
Dear Sir:

Enclosed please find a Unilateral Administrative Order issued by the U.S. Environmental Protection Agency ("U.S. EPA") under Section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §6973. One of the Respondents under the Order is Sinclair Oil Corporation. According to Illinois Secretary of State records, CT Corporation System is the registered agent for Sinclair Oil Corporation.

This Order requires implementation of a pilot test followed by continuous operation of a multiphase extraction system in Area A with management of recovered vapors and liquids at treatment facilities located east of the Village of Hartford. Please note that the Order allows an opportunity for a conference if requested within 3 business days after issuance of the Order, or if no conference is requested, an opportunity to submit comments within 7 business days of issuance of the Order.

If you have any questions regarding the Order, please contact the undersigned at (312) 886-6620.

Sincerely yours,



Brian Barwick
Assistant Regional Counsel

Enclosure

CASE NAME: Hartford Area Hydrocarbon, Hartford, Illinois
DOCKET NO: RCRA-05-2010-0020

CERTIFICATE OF SERVICE

I hereby certify that today I filed the original of this **Complaint** and this **Certificate of Service** in the office of the Regional Hearing Clerk (E-13J), United States Environmental Protection Agency, Region 5, 77 W. Jackson Blvd., Chicago, IL 60604-3590.

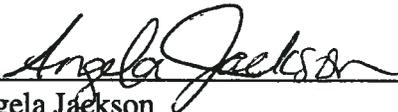
I further certify that I then caused true and correct copies of the filed document to be mailed via Certified Mail, Return Receipt Requested to the following:

David E. Stice
Corporate Attorney
Sinclair Oil Corporation
550 East South Temple
Salt Lake City, Utah 84102

Return Receipt #

And via First Class Mail to: State EPA

Dated: 7-21-2010



Angela Jackson
Administrative Program Assistant
United States Environmental Protection Agency
Land and Chemicals Division -RCRA Branch
77 W. Jackson Boulevard
Chicago, IL 60604-3590
(312) 353-5882

RECEIVED
JUL 21 2010

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U.S. ENVIRONMENTAL
PROTECTION AGENCY**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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CHICAGO, IL 60604-3590

VIA UPS Overnight

JUL 20 2010

JUL 20

REPLY TO THE ATTENTION OF:

L-8J

CT Corporation System
208 South LaSalle Street
Suite 814
Chicago, Illinois 60604

Re: Unilateral Administrative Order for the Hartford Area Hydrocarbon Site (your client Equillon Enterprises LLC dba Shell Oil Products United States)

Dear Sir:

Enclosed please find a Unilateral Administrative Order issued by the U.S. Environmental Protection Agency ("U.S. EPA") under Section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §6973. One of the Respondents under the Order is Shell Oil Products United States. According to Illinois Secretary of State records, CT Corporation System is the registered agent for Equillon Enterprises LLC dba Shell Oil Products United States.

This Order requires implementation of a pilot test followed by continuous operation of a multiphase extraction system in Area A with management of recovered vapors and liquids at treatment facilities located east of the Village of Hartford. Please note that the Order allows an opportunity for a conference if requested within 3 business days after issuance of the Order, or if no conference is requested, an opportunity to submit comments within 7 business days of issuance of the Order.

If you have any questions regarding the Order, please contact the undersigned at (312) 886-6620.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Brian Barwick".

Brian Barwick
Assistant Regional Counsel
Enclosure

CASE NAME: Hartford Area Hydrocarbon, Hartford, Illinois
DOCKET NO: RCRA-05-2010-0020

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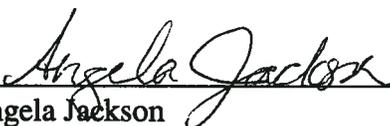
I further certify that I then caused true and correct copies of the filed document to be mailed via Certified Mail, Return Receipt Requested to the following:

Lance S. Tolson
Shell Oil Company
Legal Services US
910 Louisiana
One Shell Plaza 1120
Houston, Texas 77002

Return Receipt #

And via First Class Mail to: State EPA

Dated: 7-20-2010



Angela Jackson
Administrative Program Assistant
United States Environmental Protection Agency
Land and Chemicals Division -RCRA Branch
77 W. Jackson Boulevard
Chicago, IL 60604-3590
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REPLY TO THE ATTENTION OF:

JUL 20 2010

L-8J

CT Corporation System
208 South LaSalle Street
Suite 814
Chicago, Illinois 60604

Re: Unilateral Administrative Order for the Hartford Area Hydrocarbon Site (your client Apex Oil Company, Inc.)

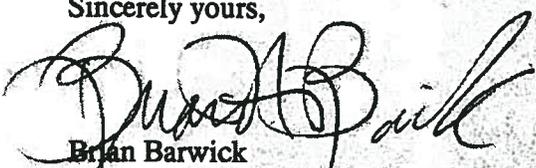
Dear Sir:

Enclosed please find a Unilateral Administrative Order issued by the U.S. Environmental Protection Agency ("U.S. EPA") under Section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §6973. One of the Respondents under the Order is Apex Oil Company, Inc. According to Illinois Secretary of State records, CT Corporation System is the registered agent for Apex Oil Company, Inc.

This Order requires implementation of a pilot test followed by continuous operation of a multiphase extraction system in Area A with management of recovered vapors and liquids at treatment facilities located east of the Village of Hartford. Please note that the Order allows an opportunity for a conference if requested within 3 business days after issuance of the Order, or if no conference is requested, an opportunity to submit comments within 7 business days of issuance of the Order.

If you have any questions regarding the Order, please contact the undersigned at (312) 886-6620.

Sincerely yours,


Brian Barwick
Assistant Regional Counsel

Enclosure

CASE NAME: Hartford Area Hydrocarbon, Hartford, Illinois
DOCKET NO: RCRA-05-2010-0020

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I further certify that I then caused true and correct copies of the filed document to be mailed via Certified Mail, Return Receipt Requested to the following:

Douglas D. Himmert
Executive Vice President and General Counsel
Apex Oil Company
8235 Forsyth Avenue – 4th Floor
St, Louis, Missouri 63105

Return Receipt #

And via First Class Mail to: State EPA

Dated: 7-20-2010



Angela Jackson
Administrative Program Assistant
United States Environmental Protection Agency
Land and Chemicals Division -RCRA Branch
77 W. Jackson Boulevard
Chicago, IL 60604-3590
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REPLY TO THE ATTENTION OF:

L-8J

JUL 20 2010

CT Corporation System
208 South LaSalle Street
Suite 814
Chicago, Illinois 60604

Re: Unilateral Administrative Order for the Hartford Area Hydrocarbon Site (your client PREMCOR Refining Group, Inc.)

Dear Sir:

Enclosed please find a Unilateral Administrative Order issued by the U.S. Environmental Protection Agency ("U.S. EPA") under Section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §6973. One of the Respondents under the Order is the PREMCOR Refining Group, Inc. According to Illinois Secretary of State records, CT Corporation System is the registered agent for the PREMCOR Refining Group, Inc..

This Order requires implementation of a pilot test followed by continuous operation of a multiphase extraction system in Area A with management of recovered vapors and liquids at treatment facilities located east of the Village of Hartford. Please note that the Order allows an opportunity for a conference if requested within 3 business days after issuance of the Order, or if no conference is requested, an opportunity to submit comments within 7 business days of issuance of the Order.

If you have any questions regarding the Order, please contact the undersigned at (312) 886-6620.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Brian Barwick".

Brian Barwick
Assistant Regional Counsel

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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VIA UPS Overnight

REPLY TO THE ATTENTION OF:

L-8J

JUL 20 2010

CT Corporation System
208 South LaSalle Street
Suite 814
Chicago, Illinois 60604

Re: Unilateral Administrative Order for the Hartford Area Hydrocarbon Site (your client Atlantic Richfield Company)

Dear Sir:

Enclosed please find a Unilateral Administrative Order issued by the U.S. Environmental Protection Agency ("U.S. EPA") under Section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §6973. One of the Respondents under the Order is the Atlantic Richfield Company ("ARCO"). According to Illinois Secretary of State records, CT Corporation System is the registered agent for ARCO.

This Order requires implementation of a pilot test followed by continuous operation of a multiphase extraction system in Area A with management of recovered vapors and liquids at treatment facilities located east of the Village of Hartford. Please note that the Order allows an opportunity for a conference if requested within 3 business days after issuance of the Order, or if no conference is requested, an opportunity to submit comments within 7 business days of issuance of the Order.

If you have any questions regarding the Order, please contact the undersigned at (312) 886-6620.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Brian Barwick".

Brian Barwick
Assistant Regional Counsel

Enclosure

CASE NAME: Hartford Area Hydrocarbon, Hartford, Illinois
DOCKET NO: RCRA-05-2010-0020

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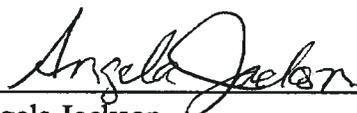
I further certify that I then caused true and correct copies of the filed document to be mailed via Certified Mail, Return Receipt Requested to the following:

Lisa K. Hodges
Environmental & Regulatory Affairs
The Valero Companies
Post Office Box 696000
San Antonio, Texas 78269-6000

Return Receipt #

And via First Class Mail to: State EPA

Dated: 7-20-2010



Angela Jackson
Administrative Program Assistant
United States Environmental Protection Agency
Land and Chemicals Division -RCRA Branch
77 W. Jackson Boulevard
Chicago, IL 60604-3590
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CASE NAME: Hartford Area Hydrocarbon, Hartford, Illinois
DOCKET NO: RCRA-05-2010-0020

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Rebecca Raftery
BP America Inc.
Law Department
Mail Code 4 West
4101 Winfield Road
Warrenville, Illinois 60555

Return Receipt #

And via First Class Mail to: State EPA

Dated: 7-20-2010



Angela Jackson
Administrative Program Assistant
United States Environmental Protection Agency
Land and Chemicals Division -RCRA Branch
77 W. Jackson Boulevard
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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 5**

IN THE MATTER OF:)	Docket No. RCRA-05-2010-0020
)	
Hartford Area Hydrocarbon	)	ADMINISTRATIVE ORDER
Site, Hartford, Illinois	)	PURSUANT TO SECTION 7003
	)	OF THE RESOURCE
	)	CONSERVATION AND
Respondents:	)	RECOVERY ACT,
	)	42 U.S.C. § 6973
APEX OIL COMPANY, INC.,)	
ATLANTIC RICHFIELD COMPANY,)	
EQUILON ENTERPRISES LLC)	
SINCLAIR OIL CORP., and)	
THE PREMCOR REFINING)	
GROUP INC.)	

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PROTECTION AGENCY

I. JURISDICTION AND GENERAL PROVISIONS

This Order is issued pursuant to the authority vested in the President of the United States by Section 7003 of the Resource Conservation and Recovery Act (“RCRA”), 42 U.S.C. § 6973, which authority has been delegated to the Regional Administrators of the United States Environmental Protection Agency (“EPA”) by Delegations 8-22-A and 8-22-B (April 20, 1994), and redelegated to the Director of the Land and Chemicals Division of EPA Region 5 by Delegations 8-22-A and 8-22-B.

This Order pertains to the Hartford Hydrocarbon Site located in the Village of Hartford, Illinois (the “Hartford Site” or the “Site”). This Order requires the Respondents to conduct activities described herein to abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of Solid Wastes, including petroleum and refined petroleum products, at the Site.

Respondents Atlantic Richfield Company, Equillon Enterprises LLC, Sinclair Oil Corporation, and the PREMCOR Refining Group (collectively referred to as the “Hartford Working Group” or “HWG”) are parties to a March 17, 2004 Administrative Order on Consent (“AOC”) which is included as Appendix A to this Order. With respect to Respondent Apex Oil Company, Inc., the actions required by this Order are concurrently required pursuant to a July 28, 2008, *Order and Terms of Injunction Pursuant to Fed. R. Civ. P. 65(d)* (“Apex Injunction”) entered in *United States v. Apex Oil Co.*, 2008 WL 7836308 (S.D. Ill. 2008) and included as Appendix B to this Order. Paragraph 9 of the Apex Injunction provides that work required by the Apex Injunction shall be subject to EPA oversight and approval. This Order sets forth the oversight and approval structure for a portion of the work required under the Apex Injunction. Nothing in this Order in

any way alters, limits, or otherwise affects the Respondents' continuing obligations under the AOC and the Apex Injunction.

EPA has notified the State of Illinois of this action pursuant to Section 7003(a) of RCRA, 42 U.S.C. § 6973(a).

II. PARTIES BOUND

This Order applies to and is binding upon Respondents and Respondents' receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondents including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Order. Respondents are jointly and severally liable for carrying out all activities required by this Order. Compliance or noncompliance by one or more Respondent with any provision of this Order shall not excuse or justify noncompliance by any other Respondent.

Respondents shall ensure that their contractors, subcontractors, and representatives comply with this Order. Respondents shall be responsible for any noncompliance.

III. FINDINGS OF FACT

Based on available information, including the Administrative Record in this matter, EPA hereby finds that:

1. The Site is located adjacent to the Mississippi River in the Village of Hartford, Madison County, Illinois and depicted generally in Appendix C.
2. The PREMCOR Refining Group Inc. ("Premcor") is a corporation organized under the laws of the State of Delaware, which is qualified to do business in the State of Illinois. From 1988 to September 27, 2002, Premcor owned and operated an oil refinery (the "Hartford Refinery") near the Village of Hartford. In July 2003, Premcor sold the process units of the Hartford Refinery. Premcor continues to own the land on which the Refinery is located and continues to operate petroleum storage, distribution, and terminal operations located at the Refinery. From 1988 to the present, Premcor owned and operated three or more pipelines running adjacent to and/or through the Village of Hartford to a dock located on the Mississippi River.
3. Atlantic Richfield Company ("ARCO") is a corporation organized under the laws of the State of Delaware, which is qualified to do business in the State of Illinois.

4. The Sinclair Oil Corporation is a corporation organized in 1976 under the laws of Wyoming, which is qualified to do business in the State of Illinois. The Sinclair Oil Company is referred to herein as “New Sinclair” to distinguish it from an unrelated corporate entity of the same name (“Old Sinclair”). Old Sinclair owned and operated the Hartford Refinery during the period 1951 through 1967, and merged with ARCO in 1969.
5. During the period from 1980 to 1984, ARCO, through its affiliate ARCO Pipeline Company, operated a 10-inch pipeline owned by New Sinclair (“ARCO/New Sinclair Pipeline”) under an operating agreement that was terminated in 1990. In addition, in 1969, ARCO became the successor by merger of Old Sinclair, which from 1951 through 1967 owned and operated the Hartford Refinery and associated pipelines.
6. Equilon Enterprises LLC dba Shell Oil Products US (“Shell Oil”) is a limited liability corporation organized under the laws of Delaware which is qualified to do business in the State of Illinois. From 1917 to 2000, Shell Oil and/or its corporate predecessors owned and/or operated an oil refinery (the “Woodriver Refinery”) and associated pipelines, in proximity to the Village of Hartford. From 1967 until the present, Shell Oil and/or its corporate predecessors owned a tannery property located near the Village of Hartford.
7. Apex Oil Company, Inc. (“Apex Oil”) is a corporation organized under the laws of Missouri, which is qualified to do business in the State of Illinois. In 2005, the United States, on behalf of EPA, filed a complaint in the United States District Court for the Southern District of Illinois against Apex Oil pursuant to RCRA Section 7003, 42 U.S.C. § 6973. On July 28, 2008, the District Court entered an Order Following Bench Trial (*United States v. Apex Oil*, 2008 WL 2945402 (S.D. Ill. 2008)) and an associated Order and Terms of Injunction Pursuant to Fed. R. Civ. P. 65(d) (*United States v. Apex Oil*, 2008 WL 7836308 (S.D. Ill. 2008)). The United States Court of Appeal for the Seventh Circuit affirmed the District Court’s entry of judgment. *United States v. Apex Oil*, 579 F.3d 734 (7th Cir. 2009). The facts and circumstances establishing Apex Oil’s liability to clean up the Site are set forth in those decisions, including findings that the hydrocarbon contamination beneath the Site presents an imminent and substantial endangerment to human health and the environment under Section 7003 of RCRA, 42 U.S.C. § 6973.
8. The pipelines associated with the Hartford Refinery include two sets of pipelines that extend from that Refinery west to the Refinery’s river dock on the Mississippi River (the “River Lines”) and a second set of pipelines that ran northwest to the Hartford Wood River Terminal (the “Terminal Lines”). The first set of River Lines was installed in the early 1950’s, and those pipelines were replaced by a second set in the 1980’s. At various times during the course of operation of the Hartford Refinery and the River Lines, petroleum hydrocarbon contamination leaked from the River Lines into the ground.
9. The Terminal Lines were also constructed in the 1950’s and ran from the Hartford Refinery along Olive Street in the Village of Hartford. Old Sinclair retained one of the

Terminal Lines (the ARCO/New Sinclair Pipeline) when it sold the Refinery to Apex Oil's predecessor, Clark Oil and Refining Corporation. ARCO acquired that line when it merged with Old Sinclair. ARCO later transferred that line to New Sinclair in the early 1980's, but contracted to operate the line for New Sinclair. During the operation of the Terminal Lines, including during the course of New Sinclair's ownership and ARCO's operation of its pipeline, petroleum hydrocarbon contamination leaked from the ARCO/New Sinclair Pipeline into the ground.

10. The pipelines associated with the Woodriver Refinery, which include a refined product pipeline, extend from the Woodriver Refinery west, parallel to Rand Avenue, north and adjacent to the Village of Hartford. During the course of Shell Oil's and/or its corporate predecessors' ownership of the pipelines, petroleum hydrocarbon contamination leaked from the pipelines into the ground.
11. The AOC requires HWG to take a number of actions at the Site, including: (i) implement several types of Interim Measures to try to address the most immediate vapor intrusion problems at the Site; (ii) conduct a series of studies to characterize the nature and extent of hydrocarbon contamination at the Site; and (iii) propose and design an Active Recovery System for hydrocarbon contamination beneath the Village.
12. Paragraph 4 of the Apex Injunction requires Apex to "construct, operate, and maintain all components of the Active LNAPL Recovery System remedy-in accordance with the Active LNAPL Recovery System 90% Design (Pl.Ex. 206) and U.S. EPA's prior written comments and qualifications in accepting the 90% Design - to abate the light non-aqueous phase liquid hydrocarbon contamination beneath the Village of Hartford."
13. Paragraph 8 of the Apex Injunction requires Apex to "coordinate and cooperate with the parties to the existing Administrative Order on Consent in performing activities required under this injunction."
14. In Paragraph 479 of the July 28, 2008, Order Following Bench Trial, the District Court determined that the Apex Injunction does not resolve any other party's potential joint and several liability for the hydrocarbon contamination at the Hartford Site, and does not relieve any other party of any obligations imposed by any legal requirement or agreement concerning the Hartford Site, such as obligations under the AOC.
15. The releases of petroleum hydrocarbon contamination from the pipelines described in Paragraphs 8 through 10 herein and the releases from the pipelines and Hartford Refinery described in the July 28, 2008, Order Following Bench Trial have commingled into a substantial subsurface plume in and around the Village of Hartford, Illinois. This hydrocarbon plume exists in four phases:

- “Residual-phase hydrocarbons” (i.e. hydrocarbons sorbed to soils) are generated as the mass of petroleum hydrocarbons moves through the subsurface and small portions of the mass are left behind, retained in soil pore spaces. Residual-phase hydrocarbons generate hydrocarbon vapors through volatilization and contaminate groundwater as water comes in contact with or moves through areas of residual-phase contamination.
 - Liquid or “free-phase” hydrocarbons can be found in soils when all of the absorption sites within the soil are filled or saturated, a condition known as the irreducible saturation. Free-phase hydrocarbons appear like oil floating in water and drip from soil cores pulled from the subsurface. Upon reaching the groundwater table, petroleum hydrocarbons may move outward laterally, floating as a layer atop the groundwater due to their greater buoyancy.
 - Dissolved-phase hydrocarbons are constituents of hydrocarbons that dissolve into groundwater or surface water. Among gasoline constituents, benzene is far more water soluble than some of the heavier hydrocarbons and will dissolve more readily into groundwater, as will other lighter hydrocarbons like xylenes.
 - Vapor-phase hydrocarbons arise from the volatilization of residual-phase and free-phase hydrocarbons. The closer the source, generally the higher the concentrations of vapor-phase contaminants in the subsurface gas mixture.
16. At certain times from at least 1966 to the present, oil and vapors have infiltrated into basements, crawl spaces, and/or living spaces in some homes in the northern third of Hartford, generally between Hawthorne Street to the south and Rand Avenue to the north. Hydrocarbon-related fires occur when vapor-phase hydrocarbons move into a home, build up to a level where they can become explosive, and are then ignited by an ignition source, such as a pilot light on a furnace or hot water heater. Numerous hydrocarbon-related fires occurred in Hartford from 1970 through 1990.
 17. Inhalation of petroleum hydrocarbon vapors, including benzene vapors, can result in respiratory irritation, headaches, dizziness, lightheadedness, nausea, deadening of the nerves, increased likelihood of abnormal heart rhythm (arrhythmia) and impacts on blood cell production.
 18. Exposure to benzene has been associated with development of cancer, especially acute myeloid leukemia. Benzene is one of only a few chemicals that has been classified as a “Class A - Known Human Carcinogen,” because it has been proven to cause cancer in human beings.
 19. In addition to containing benzene, vapor-phase hydrocarbons contain additional chemicals, such as toluene and xylene, which may target the same biological systems as

benzene and have similar effects and therefore contribute to the health hazard. Exposure to Hexane can cause nerve damage known as “peripheral neuropathy,” which includes numbness, muscle weakness, and eventual paralysis at high concentrations.

20. EPA, Premcor, Shell Oil, and ARCO entered into the AOC on March 17, 2004, requiring certain work at the Site. New Sinclair later entered into the AOC and joined in the efforts undertaken by Premcor, Shell Oil, and ARCO. These Respondents are collectively known as the Hartford Working Group (“HWG”).
21. The AOC required HWG to take a number of actions at the Site, including: (i) implement several types of Interim Measures to try to address the most immediate vapor intrusion problems at the Site; (ii) conduct a series of studies to characterize the nature and extent of hydrocarbon contamination at the Site; and (iii) propose and design an Active Recovery System for Light Non-Aqueous Phase Liquid (“LNAPL”) beneath the Village.

Vapor Phase

22. In 2004, dozens of permanent vapor monitoring points were installed at the Site to collect soil vapor data at different depths (very shallow, shallow, medium, and deep) in order to sample vapors in different geological strata beneath a given sampling location. In 2004 and 2005, soil vapor sampling was conducted at those newly-installed locations and at other previously-installed sampling points, as part of a set of comprehensive soil vapor investigations. In many of those sampling locations, extremely high levels of benzene, isopentane, and other vapor-phase hydrocarbon constituents were found at all depths:
 - Soil vapor samples collected in the A Clay (the uppermost soil layer at the site) at vapor monitoring point VMP-15VS in September 2004 contained benzene at 500,000 parts per billion by volume (“ppbv”), which equates to approximately 1,610,000 micrograms per cubic meter (“ $\mu\text{g}/\text{m}^3$ ”) for benzene. VMP-15VS is located on North Olive Street, north of East Forest Street.
 - High levels of benzene are present in soil vapor in the A Clay. In August 2004, soil vapor samples collected in the A Clay near the Hartford Community Center at VMP-24M contained 55,000 ppbv benzene (approximately 177,000 $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the A Clay at MP-60A (in the alley between East Forest and East Watkins Streets, west of North Olive Street) in August 2004 contained 6,100 ppbv benzene (approximately 20,000 $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the A Clay at VMP-28S (on West Birch Street, near North Delmar Avenue) in August 2004 contained 2,100 ppbv benzene (approximately 6,800 $\mu\text{g}/\text{m}^3$).
 - High benzene concentrations also are present in the North Olive stratum (the silt layer lying beneath the A Clay at the northern part of the Village). Soil vapor

samples collected in the North Olive stratum at VMP-15S (on North Olive Street, north of East Forest Street) in September 2004 contained 1.4 million ppbv benzene (approximately 4.5 million $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the North Olive stratum at MP-55A (East Elm Street at North Olive Street) in August 2004 contained 350,000 ppbv benzene (approximately 1.1 million $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the North Olive stratum at VMP-6S (on the Hartford Community Center property) in August 2004 contained 300,000 ppbv benzene (approximately 1.0 million $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the North Olive stratum at MP-47A (East Date Street at North Olive Street) in August 2004 contained 36,000 ppbv benzene (approximately 116,000 $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the North Olive stratum at MP-48A (in the alley between West Date and West Elm Streets, $\frac{1}{2}$ block west of North Delmar Avenue) in August 2004 contained 34,000 ppbv benzene (approximately 110,000 $\mu\text{g}/\text{m}^3$).

○ Soil vapor samples collected in the Main Sand at MP-55C (East Elm Street at North Olive Street) in August 2004 contained 1.9 million ppbv benzene (approximately 6.1 million $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the Main Sand at MP-52C (North Delmar Avenue at Elm Street) in August 2004 contained 870,000 ppbv benzene (approximately 2.8 million $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the Main Sand at VMP-6D (on the Hartford Community Center property) in August 2004 contained 300,000 ppbv benzene (approximately 970,000 $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the Main Sand at MP-48B (alley between West Date and West Elm Streets, $\frac{1}{2}$ block west of North Delmar Avenue) in August 2004 contained 890,000 ppbv benzene (approximately 3.1 million $\mu\text{g}/\text{m}^3$). Soil vapor samples collected in the Main Sand at VMP-26D (East Watkins Street near North Market Street) in August 2004 contained 60,000 ppbv benzene (approximately 190,000 $\mu\text{g}/\text{m}^3$).

23. From 2004 through the present, Respondents have collected air samples at various indoor locations and at sub-slab monitoring points. This data is evaluated by reference to "Comparison Values" for particular hydrocarbon compounds. When there are exceedences of Comparison Values for chemicals in sub-slab samples, but not in the indoor air, the potential for vapor intrusion into the residence still exists due to the proximity of the vapors to the interior of the home. Where there are exceedences in both the indoor air and the sub-slab samples, vapor intrusion is likely occurring with the sub-slab vapors at least contributing to indoor air levels. Where there are exceedences in indoor air, but not in the sub-slab samples, indoor air concentrations may have indoor air sources contributing to the concentrations.
24. As part of the In-Home Interim Measures program, Respondents have performed periodic indoor and sub-slab sampling in many homes in North Hartford. Although most of that data set reflects results obtained since in-home mitigation measures have been installed in those homes (and the impact of an expanded area-wide Vapor Control System), certain

information in that residential data set provides strong evidence of the serious risks of hydrocarbon vapor intrusion into Hartford homes, as summarized below:

○ In a number of cases, the vapors beneath the basement foundation have equaled or exceeded 10% of the lower explosive limit. The “lower explosive limit” (or “LEL”) is the level at which combustible gases in the atmosphere will ignite or explode (if there is oxygen and an ignition source). Gases exceeding 100% LEL remain combustible until the gases become so concentrated that they reach the “upper explosive limit” (or “UEL”), where the absence of oxygen no longer supports combustion. Because there is uncertainty associated with LEL measurements – in particular the significant variations in hydrocarbon gas concentrations that may be found within an enclosed area – emergency response personnel normally use a measurement of 10% LEL as a benchmark for evacuating an enclosed area, to ensure a margin of safety.

<u>Address</u>	<u>Date</u>	<u>% LEL (Sub-Slab)</u>
101 East Birch	4/6/06	Over Range
101 East Birch	7/6/06	18%
107 West Birch	10/10/05	62%
119 West Cherry	12/31/09	Over Range
119 West Date	5/2/07	90%
119 West Date	5/14/07	Over Range
119 West Date	11/13/09	Over Range
309 North Olive	5/18/05	67%
309 North Olive	9/13/05	Over Range
309 North Olive	11/9/05	Over Range
309 North Olive	12/20/05	Over Range
309 North Olive	1/19/06	Over Range
309 North Olive	2/6/06	17%
504 North Delmar	7/30/07	11%
504 North Delmar	9/4/07	10%
507 North Olive	5/17/05	62%
507 North Olive	4/2/07	Over Range

<u>Address</u>	<u>Date</u>	<u>% LEL (Sub-Slab)</u>
610 Old St. Louis	4/25/05	11%

Readings designated as “over range” exceeded 100% of the lower explosive limit and were so high that they were beyond the reading capabilities of the detection instrument.

○ In some other cases, very high sub-slab levels of benzene and other gasoline constituents have been documented, although the LEL readings were lower.

<u>Address</u>	<u>Date</u>	<u>Benzene (µg/m³)</u>	<u>Hexane (µg/m³)</u>	<u>Isopentane (µg/m³)</u>	<u>% LEL</u>
310 North Delmar	3/15/05	120,000	480,000	7,900,000	0%
310 North Delmar	4/28/05	110,000	210,000	1,600,000	0%
504 North Delmar	8/6/07	18,000	78,000	430,000	9%
504 North Delmar	8/13/07	6,100	37,000	220,000	7%
504 North Delmar	8/27/07	2,600	31,000	240,000	5%
504 North Delmar	9/10/07	1,000	37,000	260,000	5%

○ Contemporaneous indoor and sub-slab readings in several homes offer clear evidence of vapor intrusion. High sub-slab levels caused elevated levels in the basement on the same day, and somewhat lower (but still elevated) levels on the first floor.

		<u>Isopentane Concentration (µg/m³)</u>		
<u>Address</u>	<u>Date</u>	<u>1st Floor</u>	<u>Basement</u>	<u>Sub-Slab</u>
119 West Date	5/2/07	160	190	4,200,000
119 West Date	5/14/07	2,500	13,000	17,000,000
119 West Date	10/27/09	120	110	6,900,000
119 West Date	10/31/09	970	840	26,000,000
119 West Date	11/6/09	96	220	37,000,000
309 North Olive	5/18/05	11	430	9,400,000
309 North Olive	9/13/05	93	330	9,200,000

		<u>Isopentane Concentration ($\mu\text{g}/\text{m}^3$)</u>		
<u>Address</u>	<u>Date</u>	<u>1st Floor</u>	<u>Basement</u>	<u>Sub-Slab</u>
309 North Olive	11/9/05	58	100	4,400,000
309 North Olive	12/20/05	200	270	24,000,000
309 North Olive	1/19/06	130	300	20,000,000
310 North Delmar	3/15/05	130	130	7,900,000
310 North Delmar	4/28/05	44	61	1,600,000
504 North Delmar	7/30/07	15	20	640,000
504 North Delmar	8/27/07	180	190	240,000
507 North Olive	5/17/05	20	33	1,500,000
507 North Olive	12/5/05	110	170	66,000
507 North Olive	4/2/07	51	520	33,000,000

○ In some cases, there is no contemporaneous sub-slab data that can be used for comparison, but the high levels in the basement (and somewhat lower levels on the first floor) constitute strong evidence of vapor intrusion.

		<u>Isopentane Concentration ($\mu\text{g}/\text{m}^3$)</u>		<u>Hexane Concentration ($\mu\text{g}/\text{m}^3$)</u>	
<u>Address</u>	<u>Date</u>	<u>1st Floor</u>	<u>Basement</u>	<u>1st Floor</u>	<u>Basement</u>
101 East Birch	8/17/04	2,000	14,000	120	910
129 West Birch	3/10/04	27,000	50,000	2,800	5,700
130 East Watkins	6/8/04	Not sampled	11,000	Not sampled	730
134 East Watkins	6/8/04	820	3,800	110	560
134 East Watkins	1/19/05	5,100	8,500	890	1,600
310 North Delmar	6/1/04	Not sampled	10,000	Not sampled	600
310 North Delmar	1/5/05	Not sampled	5,600	Not sampled	240
310 North Delmar	2/15/05	1,100	2,300	58	120

Groundwater or Dissolved Phase

25. The groundwater in the area of free-phase and residual-phase LNAPL contamination beneath the northern part of the Site is profoundly contaminated with hydrocarbon compounds such as benzene, ethylbenzene, toluene, and xylenes. Groundwater samples collected beneath the Village of Hartford have exhibited benzene concentrations as high as 40,300 micrograms per liter (“µg/L”), a level that is 8,060 times above pertinent regulatory thresholds such as Maximum Contaminant Levels (“MCLs”) established under the EPA’s National Primary Drinking Water Standards. MCLs are risk-based benchmarks that regulatory agencies use as preliminary remediation goals for groundwater. The drinking water standard for benzene in groundwater is 5 µg/L.
26. Natural groundwater flow beneath North Hartford has been altered by industrial groundwater pumping at several industrial facilities in the area, including at the Hartford Refinery property just east of the Village, at the Shell Oil Refinery east and northeast of the Village, and at the former Amoco Refinery northeast of the Village. Under natural flow conditions, the groundwater beneath North Hartford would normally flow to the west and to the southwest, toward the Mississippi River and toward the recharge zone for Hartford’s municipal wells.
27. Elevated levels of benzene and total BTEX compounds (benzene, toluene, ethylbenzene, and xylenes) have been detected in groundwater north of Rand Avenue and west of Illinois State Route 3. The intersection of Rand Avenue and Illinois State Route 3 is approximately 2,000 feet east of the Mississippi River.
28. Groundwater contamination beneath North Hartford is present in the Main Sand Aquifer, the same aquifer from which the Village draws its drinking water supply. The groundwater contamination extends south of Watkins Street in some areas, just to the north of the groundwater recharge area for Hartford’s municipal drinking water wells. For example, benzene-contaminated groundwater has been found at monitoring point HROST-60, which is located on North Delmar Avenue between Watkins Street and Maple Street and at well HB-38, located in the alley between East Watkins Street and East Maple Street, east of North Market Street. The contaminated groundwater at that monitoring point is only about two city blocks (or about 500 feet) from the groundwater recharge zone for Hartford’s drinking water wells.
29. The following groundwater samples collected at monitoring wells throughout North Hartford have contained benzene concentrations that are at least 38 times the MCL:
 - Well HMW-49D is located on North Delmar Avenue north of Rand Avenue. Groundwater samples collected at HMW-49D have contained benzene concentrations as high as 620 µg/L.

- Well HMW-38B is located on the Hartford Community Center property near the intersection of West Rand Avenue and North Old St. Louis Road. Groundwater samples collected at HMW-38B have contained benzene concentrations as high as 7,550 µg/L.
- Well HMW-46C is located on the Hartford Community Center property, south of West Rand Avenue, between North Old St. Louis Road and North Delmar Avenue. Groundwater samples collected at HMW-46C have contained benzene concentrations as high as 9,290 µg/L.
- Well HMW-47C is located on the Hartford Community Center property near the corner of Rand Avenue and North Delmar Avenue. Groundwater samples collected at HMW-47C have contained benzene concentrations as high as 8,420 µg/L.
- Well HMW-48D is located on North Olive Street between East Rand Avenue and East Birch Street. Groundwater samples collected at HMW-48D have contained benzene concentrations as high as 8,750 µg/L.
- Well MP-78D is located on West Arbor Street near North Old St. Louis Road. Groundwater samples collected at MP-78D contained benzene concentrations as high as 20,300 µg/L.
- Well HMW-45C is located on West Arbor Street near North Delmar Avenue. Groundwater samples collected at HMW-45C have contained benzene concentrations as high as 16,600 µg/L.
- Well MP-79D is located on West Birch Street in between North Old St. Louis Road and North Delmar Avenue. Groundwater samples collected at MP-79D contained benzene concentrations as high as 18,800 µg/L.
- Well MP-85D is located on North Olive Street at the intersection with East Birch Street. Groundwater samples collected at MP-85D have contained benzene concentrations as high as 10,100 µg/L.
- Well MP-83C is located on North Old St. Louis Road between West Birch Street and West Cherry Street. Groundwater samples collected at MP-83C have contained benzene concentrations as high as 9,310 µg/L.
- Well HB-31 is located just south of West Birch Street in between North Old St. Louis Road and North Delmar Avenue. Groundwater samples collected at HB-31 contained benzene concentrations as high as 25,400 µg/L.

- Well MP-30C is located near North Delmar Avenue between West Birch Street and West Cherry Street. Groundwater samples collected at MP-30C have contained benzene concentrations as high as 11,900 µg/L.
- Well HB-32 is located on North Market Street between East Birch Street and East Cherry Street. Groundwater samples collected at HB-32 have contained benzene concentrations as high as 1,330 µg/L.
- Well MP-31C is located on West Cherry Street near the intersection with Old St. Louis Road. Groundwater samples collected at MP-31C have contained benzene concentrations as high as 12,300 µg/L.
- Well MP-32C is located on West Cherry Street in between North Old St. Louis Road and North Delmar Avenue. Groundwater samples collected at MP-32C have contained benzene concentrations as high as 17,200 µg/L.
- Well MP-33D is located on West Cherry Street in between North Old St. Louis Road and North Delmar Avenue. Groundwater samples collected at MP-33D have contained benzene concentrations as high as 25,600 µg/L.
- Well MP-34C is located on West Cherry Street near the intersection with North Delmar Avenue. Groundwater samples collected at MP-34C have contained benzene concentrations as high as 34,000 µg/L.
- Well MP-36C is located across the railroad tracks from North Market Street, north of East Cherry Street. Groundwater samples collected at MP-36C have contained benzene concentrations as high as 29,700 µg/L.
- Well MP-38C is located near North Old St. Louis Road between West Cherry Street and West Date Street. Groundwater samples collected at MP-38C have contained benzene concentrations as high as 38,600 µg/L.
- Well MP-43C is located on West Date Street near North Old St. Louis Road. Groundwater samples collected at MP-43C have contained benzene concentrations as high as 31,200 µg/L.
- Well MP-40C is located on North Delmar Avenue just north of the intersection with Date Street. Groundwater samples collected at MP-40C have contained benzene concentrations as high as 16,000 µg/L.
- Well MP-41C is located on North Market Street just north of the intersection with East Date Street. Groundwater samples collected at MP-41C have contained benzene concentrations as high as 25,900 µg/L.

- Well MP-44D is located on East Date Street near the intersection of North Market Street. Groundwater samples collected at MP-44D have contained benzene concentrations as high as 25,900 µg/L.
- Well MP-48C is located in the alley between West Date Street and West Elm Street, and between Old St. Louis Road and North Delmar Avenue. Groundwater samples collected at MP-48C have contained benzene concentrations as high as 21,000 µg/L.
- Well MP-52C is located on North Market Street just north of the intersection with East Elm Street. Groundwater samples collected at MP-52C have contained benzene concentrations as high as 33,200 µg/L.
- Well HB-37 is located on East Elm Street between North Market Street and North Olive Street. Groundwater samples collected at HB-37 have contained benzene concentrations as high as 32,800 µg/L.
- Well MP-86C is located on North Delmar Avenue north of the intersection with Forest Street. Groundwater samples collected at MP-86C have contained benzene concentrations as high as 34,300 µg/L.
- Well RW1 is located north of East Forest Street near North Delmar Avenue. Groundwater samples collected at RW1 have contained benzene concentrations as high as 7,660 µg/L.
- Well HMW-44D is located on North Olive Street in between East Elm Street and East Forest Street. Groundwater samples collected at HMW-44D have contained benzene concentrations as high as 2,220 µg/L.
- Well HMW-41B is located on West Forest Street near North Delmar Avenue. Groundwater samples collected at HMW-41B have contained benzene concentrations as high as 5,060 µg/L.
- Well MP-59C is located near North Market Street, between East Watkins Street and East Forest Street. Groundwater samples collected at MP-59C have contained benzene concentrations as high as 40,300 µg/L.
- Well MP-58C is located in the alley between East Forest Street and East Watkins Street, and between North Market Street and North Olive Street. Groundwater samples collected at MP-58C have contained benzene concentrations as high as 38,500 µg/L.

- Well HMW-54C is located on North Olive Street between East Forest Street and East Watkins Street. Groundwater samples collected at HMW-54C have contained benzene concentrations as high as 1,760 µg/L.
- Well HMW-42B is located on North Market Street south of the intersection with East Watkins Street. Groundwater samples collected at HMW-42B have contained benzene concentrations as high as 220 µg/L.
- Well MP-88C is located on East Watkins Street in between North Market Street and North Olive Street. Groundwater samples collected at MP-88C have contained benzene concentrations as high as 28,700 µg/L.
- Well MP-64C is located on East Watkins Street near the intersection with North Olive Street. Groundwater samples collected at MP-64C have contained benzene concentrations as high as 34,200 µg/L.
- Well HMW-53B is located on North Olive Street near the intersection with East Watkins Street. Groundwater samples collected at HMW-53B have contained benzene concentrations as high as 18,600 µg/L.
- Well HB-38 is located in the alley between East Watkins Street and East Maple Street, and between North Market Street and North Olive Street. Groundwater samples collected at HB-38 have contained benzene concentrations as high as 261 µg/L.
- Well MP-63C is located in the alley between East Watkins Street and East Maple Street, and between North Market Street and North Olive Street. Groundwater samples collected at MP-63C have contained benzene concentrations as high as 193 µg/L.
- Well HMW-43C is located on North Olive Street, south of the intersection with East Watkins Street. Groundwater samples collected at HMW-43C have contained benzene concentrations as high as 4,630 µg/L.

Residual and Free Phase Contamination

30. A Rapid Optical Screening Tool (“ROST”) was used to study extensive portions of the Village of Hartford and the Hartford Refinery. In 2004 and 2005, 130 ROST boring locations were selected and completed at the Site on a systematic grid with a spacing of 50 to 100 feet between points. On the Refinery property 183 ROST boring locations were completed in 2006.

31. ROST analysis has identified current hydrocarbon contamination (free-phase and/or residual-phase) beneath virtually all of Hartford north of East Watkins Street and extending east under the Refinery property. Soils beneath the Site are contaminated with a complex three-dimensional distribution of different petroleum product types, but gasoline-range and diesel-range hydrocarbons predominate, according to the ROST studies and other confirming studies.
32. The ROST studies have found up to 30-40 feet of total ROST response near the Terminal Lines and the River Lines as they extend from the Refinery through the Village along North Olive and Elm Streets (meaning that the hydrocarbon contamination extends downward for 30-40 feet beneath those pipeline corridors).
33. Based on the ROST studies, the estimated extent of free and residual phase hydrocarbon contamination is depicted in Appendix D.

Active LNAPL Recovery System

34. As required by the AOC with EPA, HWG performed extensive work to identify additional approaches and technologies that could be used for a full-scale system to recover the free-phase and residual-phase hydrocarbon contamination beneath the Village. Those efforts included work to characterize the nature and extent of contamination at the Hartford Site, LNAPL sampling and analysis studies, LNAPL recharge evaluations to assess hydrocarbon recovery potential in different areas at the Site, soil core sampling, and pilot tests and modeling on multiple recovery technologies, including multi-phase extraction.
35. Using information gathered in those studies, HWG identified and evaluated eight different LNAPL recovery technologies and summarized the results of that assessment in a formal report that was required to be submitted to EPA under the AOC. That February 2006 report – entitled *Proposal for an Active LNAPL Recovery System* (or the “Remedy Proposal Report”) – documented separate technology evaluations for several different areas and sub-areas at the Site, as depicted on a map included in the report. In each of those areas, the different recovery technologies were evaluated based on standard remedy selection criteria set forth in the National Contingency Plan (“NCP”), such as protectiveness, cost, long-term effectiveness, and implementability.
36. The Remedy Proposal Report selected multi-phase extraction as the primary LNAPL recovery technology for Area A, along North Olive Street, between East Forest Street and East Elm Street. Area A surrounds well HMW-44C. In 2005, hydrocarbon recovery pilot testing at well HMW-44C showed that it had by far the greatest hydrocarbon yield and recharge potential of any of the wells that were tested at the Site.

37. Multi-phase extraction (MPE) uses a network of wells, a vacuum system, and piping to collect both liquid, free-phase and vapor-phase hydrocarbon contamination from subsurface soils. The piping leads to associated facilities where the recovered liquids and vapors are separated, collected, and treated or destroyed. MPE can be designed and implemented in a variety of configurations which can achieve remediation of residual phase hydrocarbons both below and above the water table; can potentially create a large radius of influence affecting greater capture; can overcome hydraulic depth limitations with proper configuration; and remediation of the capillary fringe and smear zone, a significant issue in Hartford which may not be addressed with more passive technologies.
38. In December 2007, EPA sent HWG a letter to memorialize acceptance of a 90% Design Report submitted by HWG, with caveats that the final design for the Active LNAPL Recovery System would need to be adjusted to address EPA's comments and concerns regarding coverage in certain areas and the timing for the remedy phase-in.
39. Once the Active LNAPL Recovery System is fully-installed, it will probably need to operate for 15-25 years.
40. Some aspects of the System, such as the wastewater treatment plant and the thermal treatment unit, will need to be operated and monitored on a constant basis throughout that period of operation. Other parts of the system will need to be adjusted periodically. Many elements of the system will need to be maintained (and some will need to be repaired and/or replaced) during operation of the Active LNAPL Recovery System.
41. As described in the 90% Design Report, the Active LNAPL Recovery System will be implemented in phases beginning in Area A. HWG submitted a work plan for a pilot test of the initial phase of the Active LNAPL Recovery System (consisting of five multi-phase extraction wells in Area A).
42. The Area A pilot test is intended to confirm or modify as warranted the site-wide design parameters outlined in the 90% Design Report. These design parameters are necessary for the site-wide implementation of the LNAPL remedy. The test design will focus on validating assumptions and establishing reasonable ranges for selected individual design parameters by replicating the full-scale LNAPL extraction processes over a limited area and time frame.
43. The Area A multi-phase extraction wells will remain in continuous operation following completion of the pilot test and will continue to recover LNAPL while the phased implementation of the larger remedy progresses throughout the entire Site. Collection, conveyance, and treatment components of the Active LNAPL Recovery System constructed in conjunction with the Area A pilot test will remain in service and be utilized for hydrocarbons recovered from throughout the Site as additional phases are implemented throughout the entire Site.

44. At this time, HWG has installed or staged near the Site the Area A extraction wells, much of the vapor and liquid conveyance system, as well as treatment units. HWG, however, is not required to complete and operate the Area A system or any other remedy implementation work under the existing AOC and has declined to do so voluntarily.
45. Pursuant to paragraph 4 of the Apex Injunction, Apex Oil is required to construct, operate, and maintain the Active LNAPL Recovery System, including and starting with the Area A work described in this Order.
46. Apex Oil's compliance with the terms of this Order is required by paragraph 9 of the Apex Injunction, subjecting all work required by the Apex Injunction to EPA oversight and approval.
47. The extraction, collection, and conveyance components of the Active LNAPL Recovery System will be located in Village of Hartford right of ways. The Village of Hartford has in the past granted access to its right of ways for the area-wide interim soil vapor extraction system and is expected to do allow access for the Active LNAPL Recovery System.
48. The associated facilities described in Paragraph 37 are to be located east of the Village of Hartford on properties owned by Premcor and Shell Oil. Conveyance of recovered LNAPL to those properties will be via a pipeline located under three railroad properties. HWG has obtained access agreements for the three railroad properties.

IV. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and an administrative record supporting this Order, EPA has determined that:

- a. Each Respondent is a "person" as defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15).
- b. Petroleum hydrocarbon products that have been discharged, leaked, spilled, placed, or otherwise disposed of into or on land or water at the Site constitute "discarded materials" that are a "solid waste" within the meaning of RCRA Section 7003(a), 42 U.S.C. § 6973(a).
- c. Imminent and Substantial Endangerment. The past discharge, deposit, spilling, and leaking of petroleum hydrocarbon products may present an imminent and substantial endangerment to human health and/or the environment within the meaning of Section 7003(a) of RCRA, 42 U.S.C. § 6973(a) because:

1. Vapors emanate from hydrocarbon contamination in soils and groundwater at the Hartford Site. Hartford residents who are exposed to chemicals contained in those vapors may suffer adverse health effects or may be harmed by fires or explosions caused by those vapors.
 2. Hydrocarbon constituents are contaminating the groundwater beneath Hartford. In addition, groundwater that is contaminated with hydrocarbon constituents (such as benzene) is located very close to the recharge area for the Village of Hartford's public drinking water supply wells, and such contaminated groundwater could migrate toward or otherwise affect that recharge area. Finally, contaminated groundwater at the Site is located very close to the Mississippi River and could migrate westward and contaminate the River.
- d. Each Respondent discharged, deposited, spilled, and leaked hydrocarbons from refinery units and/or pipelines it owned and/or operated within or adjacent to the Village of Hartford, which constituted "contributing to" the "disposal" of "solid waste" within the meaning of RCRA Section 7003(a). *See* 42 U.S.C. §§ 6903(3), 6903(27), 6973(a).
- e. The actions required by this Order may be necessary to protect human health and/or the environment because free and residual phase LNAPL serves as a source for hydrocarbon vapors and groundwater contamination. Therefore, removal of LNAPL will reduce the volume of vapor phase hydrocarbon contamination beneath Hartford and eventually facilitate cleanup of groundwater.

V. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, EPA hereby orders that Respondents perform the following actions:

1. **Notice of Intent to Comply**

Respondents shall notify EPA in writing within 7 business days after the effective date of this Order of Respondents' irrevocable intent to comply with this Order. Failure by any Respondent to provide such notification within this time period shall be a violation of this Order by such Respondent.

2. **Designation of Work Contractor, Project Coordinator, and On-Scene Coordinator**

Respondents shall serve as the Work Contractor and perform the actions required by this Order themselves or retain a contractor(s) to implement those actions as the Work Contractor. Respondents shall notify EPA of the Work Contractor's name (if other than the Respondents)

and qualifications within 10 business days of the effective date of this Order. Respondents shall also notify EPA of the name and qualifications of any other contractors or subcontractors retained to perform work under this Order at least 5 business days prior to commencement of such work. EPA retains the right to disapprove of any Work Contractor or any other contractors and/or subcontractors named by the Respondents. If EPA disapproves a selected contractor, Respondents shall retain a different contractor within 10 business days following EPA's disapproval and shall notify EPA of that contractor's name and qualifications within 11 business days of EPA's disapproval.

Within 10 business days after the effective date of this Order, the Respondents shall designate a Project Coordinator who shall be responsible for administration of all the Respondent's actions required by the Order and submit the designated coordinator's name, address, telephone number, and qualifications to EPA. To the greatest extent possible, the Project Coordinator shall be present on-site or readily available during site work. EPA retains the right to disapprove of any Project Coordinator named by the Respondents. If EPA disapproves a selected Project Coordinator, Respondents shall retain a different Project Coordinator within 10 business days following EPA's disapproval and shall notify EPA of that person's name and qualifications within 11 business days of EPA's disapproval. Receipt by Respondents' Project Coordinator of any notice or communication from EPA relating to this Order shall constitute receipt by all Respondents.

EPA has designated Kevin Turner of the Emergency Response Branch, Region 5, as its On-Scene Coordinator ("OSC"). Respondents shall direct all submissions required by this Order to the OSC at 8588 Route 148, Marion, Illinois 62959 and via email to Turner.Kevin@EPA.GOV. All Respondents are encouraged to make their submissions to EPA on recycled paper (which includes significant postconsumer waste paper content where possible) and using two-sided copies.

3. Work to Be Performed

Respondents shall complete, pilot test, and continuously operate the Area A LNAPL recovery system by performing, at a minimum, the following activities:

Activity	Due Date
1. Complete setup of treatment equipment on the Tannery property	August 6, 2010
2. Complete tie-in construction from Area A to the Tannery property	August 13, 2010
3. Complete shake-down of Area A recovery system	August 27, 2010

- | | | |
|----|---|---|
| 4. | Initiate pilot test of the Area A LNAPL recovery system | August 30, 2010 |
| 5. | Submit raw data to EPA | Weekly beginning August 13, 2010 |
| 6. | Submit data analysis to EPA with draft Work Plan for continuous operation and maintenance of Area A LNAPL recovery system | September 24, 2010 |
| 7. | Continuously operate and maintain the Area A LNAPL recovery system in accordance with draft Work Plan | Pending EPA approval of Work Plan |
| 8. | Continuously operate and maintain the Area A LNAPL recovery system in accordance with the EPA approved Work Plan | Within 20 days of EPA approval of Work Plan |

3.1 Work Plans and Implementation

Pilot testing of the Area A LNAPL recovery system shall be conducted in accordance with the November 5, 2008, Area A LNAPL Remedy Pilot Study Multiphase Extraction (MPE) General Scope of Work, which is included as Appendix E to this Order. Unless otherwise authorized in writing by the OSC, any field modifications to that work plan shall not be implemented without prior EPA approval. Among other things, the pilot test is designed to evaluate two phase extraction (TPE) and low flow dual phase extraction (DPE), both of which are types of multi-phase extraction.

As scheduled above, the Respondents shall submit to EPA for approval a draft Work Plan for continuous operation and maintenance of the Area A LNAPL recovery system. The draft Work Plan may propose the use of TPE or DPE and shall describe all operation and maintenance requirements for the Area A LNAPL recovery system and include a schedule to initiate continuous operation and maintenance of the Area A LNAPL recovery system within 20 days of EPA approval of the Work Plan. EPA may approve, disapprove, require revisions to, or modify the draft Work Plan. If EPA requires revisions, Respondents shall submit a revised draft Work Plan within 7 business days of notification. Respondents shall implement the Work Plan as finally approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, the Work Plan, the schedule, and any subsequent modifications shall be fully enforceable under this Order. Respondents shall notify EPA at least 48 hours prior to performing any on-site work pursuant to the EPA approved Work Plan.

During the pilot test period, LNAPL recovery from Area A will be limited to the Area A LNAPL recovery system. Thereafter, Respondents may request EPA approval to commence or undertake other liquid phase LNAPL removal actions in Area A.

3.2 Health and Safety Plan

Respondents shall conduct all work in accordance with a plan that protects the public health and safety during performance of on-site work under this Order. This plan shall comply with applicable Occupational Safety and Health Administration (OSHA) regulations at 29 C.F.R. Part 1910. If EPA determines it is appropriate, the plan shall also include contingency planning.

3.3 Quality Assurance and Sampling

All sampling and analyses performed pursuant to this Order shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (“QA/QC”), data validation, and chain of custody procedures. Respondents shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with EPA guidance. Upon request by EPA, Respondents shall have such a laboratory analyze samples submitted by EPA for quality assurance monitoring. Respondents shall provide to EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Respondents shall also ensure provision of analytical tracking information consistent with OSWER Directive No. 9240.0-2B, “Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites.”

Upon request by EPA, Respondents shall allow EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondents or their contractors or agents while performing work under this Order. Respondents shall notify EPA not less than 3 business days in advance of any sample collection activity. EPA shall have the right to take any additional samples that it deems necessary.

3.4 Reporting

Respondents shall submit a weekly written progress report to EPA concerning activities undertaken pursuant to this Order, beginning 7 calendar days after the effective date of this Order, until termination of this Order, unless otherwise directed by the OSC. These reports shall describe all significant developments during the preceding period, including the work performed and any problems encountered, analytical data received during the reporting period, and developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

Any Respondent that owns any portion of the Site, and any successor in title shall, at least 30 days prior to the conveyance of any interest in real property at the Site, give written notice of this Order to the transferee and written notice of the proposed conveyance to EPA and the State. The

notice to EPA and the State shall include the name and address of the transferee. The party conveying such an interest shall require that the transferee will provide access as described in Section V.4 (Access to Property and Information).

3.5 Performance Standards

By no later than thirty days from the effective date of this Order, Respondents shall submit for EPA review and approval a revised and complete procedure for measuring LNAPL transmissivity (SOP). The procedure shall include an LNAPL recovery endpoint expressed as transmissivity in a range in a geologic formation and the protocol for measuring transmissivity in Hartford.

Upon approval by EPA, the Respondents shall operate and maintain the Area A LNAPL recovery system such that the following short-term Performance Standard is continuously met:

By no later than October 22, 2010, the Respondents shall report to EPA baseline transmissivity values based on current LNAPL transmissivity data as detailed in the LNAPL Transmissivity SOP. Thereafter, the Respondents will monitor and report transmissivity values in accordance with the LNAPL Transmissivity SOP. The short-term Performance Standard shall be that over time, adjusted for variables such as groundwater levels and seasonal fluxuations, the transmissivity values will trend downward.

The purpose of the LNAPL Transmissivity SOP is to provide a mechanism to ensure that both short-term and long-term Performance Standards for the Active LNAPL recovery system are met. LNAPL Transmissivity and the associated SOP is for liquid phase (free phase) LNAPL only. SVE associated with the Interim Measures or SVE implemented for additional mass removal shall continue to operate independently of the active LNAPL recovery system.

3.6 Final Report

The Area A LNAPL recovery system will be integrated into a larger Active LNAPL Recovery System. Within 60 calendar days after Respondents' completion of all actions required under this Order and any other Orders for implementation of the larger Active LNAPL Recovery System, the Respondents shall submit for EPA review a final report summarizing the actions taken to comply with this Order. The final report shall also include a good faith estimate of total costs incurred in complying with the Order, a listing of quantities and types of materials removed, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destinations of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the implementation of this Order (*e.g.*, manifests, invoices, bills, contracts, and permits).

The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

4. Access to Property and Information

Respondents shall provide or obtain access as necessary to the Site and all appropriate off-site areas, and shall provide access to all records and documentation related to the conditions at the Site and the activities conducted pursuant to this Order. Such access shall be provided to EPA employees, contractors, agents, consultants, designees, representatives, and State of Illinois representatives. These individuals shall be permitted to move freely at the Site and appropriate off-site areas in order to conduct activities which EPA determines to be necessary. Respondents shall submit to EPA, upon request, the results of all sampling or tests and all other data generated by Respondents or their contractors, or on the Respondents' behalf during implementation of this Order.

Where work under this Order is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall obtain all necessary access agreements within 10 calendar days after the effective date of this Order, or as otherwise specified in writing by the OSC. Respondents shall immediately notify EPA if, after using their best efforts, they are unable to obtain such agreements. Respondents shall describe in writing their efforts to obtain access. EPA may then assist Respondents in gaining access, to the extent necessary to effectuate the response activities described herein, using such means as EPA deems appropriate.

5. Record Retention, Documentation, Availability of Information

Respondents shall preserve all documents and information, in their possession or the possession of their contractors, subcontractors or representatives, relating to work performed under this Order, or relating to the hazardous substances found on or released from the Site, for three years following completion of all the actions required by this Order, the AOC, and the Apex Injunction. At the end of this three year period and at least 60 days before any document or information is destroyed, Respondents shall notify EPA that such documents and information are available to EPA for inspection, and upon request, shall provide the originals or copies of such documents and information to EPA. In addition, Respondents shall provide documents and information retained under this Section at any time before expiration of the three year period at the written request of EPA. Any information that Respondents are required to provide or maintain pursuant to this Order is not subject to the Paperwork Reduction Act of 1995, 44 U.S.C. §3501 *et seq.*

6. Compliance With Other Laws

All actions required pursuant to this Order shall be performed in accordance with all applicable local, state, and federal laws and regulations.

7. Emergency Response and Notification of Releases

If any incident, or change in Site conditions, during the activities conducted pursuant to this Order causes or threatens to cause an additional release of petroleum substances from the Site or an endangerment to the public health, welfare, or the environment, the Respondents shall immediately take all appropriate action to prevent, abate or minimize such release, or endangerment caused or threatened by the release. Respondents shall also immediately notify the OSC or, in the event of his/her unavailability, shall notify the Regional Duty Officer, Emergency Response Branch, Region 5 at (312) 353-2318, of the incident or Site conditions.

Respondents shall submit a written report to EPA within 7 business days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. Respondents shall also comply with any other notification requirements, including those in Section 103 of CERCLA, 42 U.S.C. § 9603, and Section 304 of the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 11004.

VI. AUTHORITY OF THE EPA ON-SCENE COORDINATOR

The OSC shall be responsible for overseeing the implementation of this Order. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

EPA and Respondents shall have the right to change their designated OSC or Project Coordinator. EPA shall notify the Respondents, and Respondents shall notify EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. Notification may initially be made orally, but shall be followed promptly by written notice.

VII. PENALTIES FOR NONCOMPLIANCE

Violation of this Order may subject Respondents to civil penalties of up to \$6,500.00 per violation per day. Since each Respondent is separately responsible for its own compliance, each Respondent that willfully violates or fails or refuses to comply with the Order may be subject to the full amount of up to \$6,500 a day for each violation. The assessment of penalties is provided for in Section 7003(b) of RCRA, 42 U.S.C. § 6973(b), as adjusted pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended by the Debt Collection Improvement Act

of 1996, 28 U.S.C. § 2461. Should Respondents violate this Order or any portion hereof, EPA may seek judicial enforcement of this Order.

VIII. RESERVATION OF RIGHTS

The United States retains all of its authority to take, direct, or order any and all actions necessary to protect public health or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste or constituents of such wastes, on, at, or from the Site, including but not limited to the right to bring enforcement actions under RCRA and any other applicable statute or regulation.

EPA reserves all of its statutory and regulatory powers, authorities, rights, and remedies, both legal and equitable, which may pertain to a Respondent's failure to comply with any of the requirements of this Order, including without limitation the assessment of penalties under Section 7003 of RCRA, 42 U.S.C. § 6973.

This Order shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, claims, and/or authorities, civil or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory, or common law authority of the United States.

This Order is not intended to be nor shall it be construed to be a permit. Respondents acknowledge and agree that EPA's approval of the Work and/or Work Plan does not constitute a warranty or representation that the Work and/or Work Plans will achieve the required cleanup. Compliance by Respondents with the terms of this Order shall not relieve Respondents of their obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

Notwithstanding any other provision of this Order, no action or decision by EPA pursuant to this Order, including without limitation, decisions of the Regional Administrator, the Director of the Land and Chemical Division, or any authorized representative of EPA, shall constitute final agency action giving rise to any right of judicial review prior to EPA's initiation of a judicial action to enforce this Order, including an action for penalties or an action to compel Respondent's compliance with the terms and conditions of this Order.

IX. OTHER CLAIMS

By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents. The United States or EPA shall not be a party or be held out as a party to any contract entered into by the Respondents or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or

consultants in carrying out activities pursuant to this Order. Each party shall bear its own costs and attorneys fees in connection with the action resolved by this Order.

This Order does not constitute a pre-authorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. §9611(a)(2).

Nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondents or any person not a party to this Order, for any liability such person may have under RCRA, other statutes, or the common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106(a) or 107(a) of CERCLA, 42 U.S.C. §§ 9606(a), 9607(a).

X. MODIFICATIONS

Modifications to any plan or schedule may be made in writing by the OSC or at the OSC's oral direction. If the OSC makes an oral modification, it will be memorialized in writing within 7 business days; however, the effective date of the modification shall be the date of the OSC's oral direction. The rest of the Order, or any other portion of the Order, may only be modified in writing by signature of the Director, Land and Chemical Division, Region 5.

If Respondents seek permission to deviate from any approved plan or schedule, Respondents' Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis.

No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by the Respondents shall relieve Respondents of their obligations to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

XI. NOTICE OF COMPLETION

After submission of the Final Report pursuant to paragraph V.3.6, Respondents may request that EPA provide a Notice of Completion of the work required by this Order. If EPA determines, after EPA's review of the Final Report, that all work has been fully performed in accordance with this Order, except for certain continuing obligations required by this Order (*e.g.*, record retention), EPA will provide written notice to the Respondents. If EPA determines that any activities have not been completed in accordance with this Order, EPA will notify the Respondents, provide a list of the deficiencies, and require that Respondents modify the Work Plan to correct such deficiencies. The Respondents shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the EPA notice. Failure to implement the approved modified Work Plan shall be a violation of this Order.

XII. ACCESS TO ADMINISTRATIVE RECORD

The Administrative Record supporting these actions is available for review during normal business hours in the EPA Record Center, Region 5, 77 W. Jackson Blvd., Seventh Floor, Chicago, Illinois. Respondents may contact Brian Barwick, Assistant Regional Counsel, at (312) 886-6620 to arrange to review the Administrative Record. An index of the Administrative Record is included as Appendix F to this Order.

XIII. OPPORTUNITY TO CONFER

Within 3 business days after issuance of this Order, Respondents may request a conference with EPA. Any such conference shall be held within 5 business days from the date of the request, unless extended by agreement of the parties. At any conference held pursuant to the request, Respondents may appear in person or be represented by an attorney or other representative.

If a conference is held, Respondents may present any information, arguments or comments regarding this Order. Regardless of whether a conference is held, Respondents may submit any information, arguments or comments (including justifications for any assertions that the Order should be withdrawn against a Respondent), in writing to EPA within 2 business days following the conference, or within 7 business days of issuance of the Order if no conference is requested. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Order, and does not give Respondents a right to seek review of this Order. Requests for a conference shall be directed to Brian Barwick, Assistant Regional Counsel, at (312) 886-6620. Written submittals shall be submitted to:

Brian Barwick
Office of Regional Counsel
United States Environmental Protection Agency, Region 5 (C-14J)
77 West Jackson Boulevard
Chicago, Illinois 60645-3590

XIV. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XVI. EFFECTIVE DATE

This Order shall be effective upon signature by the Director of the Land and Chemicals Division of EPA, Region 5.

IT IS SO ORDERED

BY: 

Bruce F. Sypniewski
Acting Director
Land and Chemicals Division
United States
Environmental Protection Agency
Region 5

DATE: 1/20/10

APPENDIX A

March 17, 2004 Administrative Order on Consent

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

EPA Region 5 Records Ctr.



269450

IN THE MATTER OF	)	DOCKET NO. R7003-5-04-001,
	)	CWA1321-5-04-001
The Hartford Area Hydrocarbon Plume Site	)	Proceeding Under Section 7003
	)	of the Resource Conservation
	)	and Recovery Act, as amended,
Atlantic Richfield Company	)	42 U.S.C. § 6973, and
Equilon Enterprises LLC	)	Section 311 of the Clean
dba Shell Oil Products US	)	Water Act, 33 U.S.C. § 1321
The PREMCOR Refining Group Inc.)	
)	
Respondents)	
_____)	

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Order on Consent ("Order") issued by the United States Environmental Protection Agency (EPA) is entered into voluntarily by Atlantic Richfield Company ("Atlantic"), Equilon Enterprises LLC dba Shell Oil Products US ("SOP US"), and The PREMCOR Refining Group Inc. ("PREMCOR") (collectively, "Respondents") under Section 7003 of the Resource Conservation and Recovery Act (RCRA), as amended, 42 U.S.C. § 6973 and Sections 311(c) and (e), of the Clean Water Act (CWA), 33 U.S.C. § 1321(c) and (e).
2. The Regional Administrator of EPA Region 5 is authorized to issue orders under Section 7003 of RCRA and Section 311 of the CWA based on a series of delegations and an executive order originating from the President of the United States.
3. This Order requires the Respondents to perform certain Work as defined in this Order and to reimburse Response Costs incurred by the United States and paid out of the Oil Spill Liability Trust Fund for the Hartford Area Hydrocarbon Plume Site as defined in this Order. The Respondents shall conduct the Work to abate an imminent and substantial threat to the public health or welfare of the United States, including fish, shellfish, and wildlife, public and private property, habitat, and other living and nonliving natural resources under the jurisdiction or control of the United States, because of an actual or threatened discharge of oil from a facility or facilities into a navigable water in violation of Section 311(b) of the CWA, 33 U.S.C. § 1321(b).
4. EPA has notified the State of Illinois of this Order pursuant to Section 7003(a) of RCRA, 42 U.S.C. § 6973(a) and Section 311(e)(1)(B) of the CWA, 33 U.S.C. § 1321(e)(1)(B).

5. Respondents' consent to this Order is not an admission of liability or of EPA's findings of facts or conclusions of law and determinations set forth in Sections I through V of this Order. Respondents acknowledge EPA's authority to issue this Order and consent to its terms. Respondents further agree not to contest EPA's findings of facts or conclusions of law and determinations set forth in Sections I through V of this Order, the basis or validity of this Order, or its terms in any proceeding to enforce the Order.

II. PARTIES BOUND

6. This Order applies to EPA and the Respondents and any additional parties joined to this Order in the future. The Order further applies to persons acting on behalf of the Respondents, or who succeed to an interest in any Respondent and/or any additional parties joined to this Order in the future. Any change in ownership or corporate status of any Respondent, and/or any additional parties joined to this Order in the future, including but not limited to a transfer of assets or real or personal property, will not alter the responsibilities of the Respondents under this Order. Additional Respondents may be added to this Order in the future in accordance with Section XVIII.

7. Respondents shall ensure that their contractors, subcontractors, and agents comply with this Order. Respondents will be liable for any violations of this Order by their employees, agents, contractors, or subcontractors.

III. DEFINITIONS

8. Unless otherwise expressly provided herein, terms used in this Order which are defined in the CWA, the Oil Pollution Act of 1990, 33 U.S.C. §§ 2701 *et seq.* ("OPA"), or RCRA or in regulations promulgated under those statutes shall have the meaning assigned to them in the CWA, OPA, or RCRA or in such regulations. Whenever terms listed below are used in this Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

- a. "CWA" shall mean the Clean Water Act, 33 U.S.C. §§ 1251, *et seq.*
- b. "Day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.
- c. "Effective Date" shall be the effective date of this Order as provided in Section XXII.
- d. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

e. "IDPH" shall mean the Illinois Department of Public Health and any successor departments or agencies of the State.

f. "IEPA" shall mean the Illinois Environmental Protection Agency and any successor departments or agencies of the State.

g. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

h. "Old Sinclair Oil Corporation" shall mean the company that merged with Atlantic Richfield Company in 1969 as contrasted with the New Sinclair Oil Company that was incorporated under the laws of Wyoming in 1976.

i. "Order" shall mean this Administrative Order on Consent and all appendices attached hereto (listed in Section XX). In the event of conflict between this Order and any appendix, this Order shall control.

j. "OPA" shall mean the Oil Pollution Act of 1990, 33 U.S.C. §§ 2701 *et seq.*

k. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.

l. "Parties" shall mean EPA and Respondents.

m. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

n. "Respondents" shall collectively mean Equilon Enterprises LLC dba Shell Oil Products US (including its related companies Shell Oil Company, Shell Chemical LP and Shell Pipeline Company LP) (SOPUS) and their corporate predecessors, Atlantic Richfield Company (including its related companies ARCO Pipeline Company, BP Products North America Inc., BP Pipelines (North America) Inc. and BP Amoco Chemical Company) (Atlantic) and their corporate predecessors, and the PREMCOR Refining Group Inc. (including its related companies PREMCOR Inc. and PREMCOR USA) (Premcor).

o. "Response Costs" shall mean all costs not inconsistent with the NCP, including, but not limited to, direct and indirect costs, that the United States has incurred or will incur and has paid or will pay out of the Oil Spill Liability Trust Fund in connection with the Site (e.g., reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, or otherwise implementing, overseeing, or enforcing this Order, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, community relations costs, costs incurred pursuant to Paragraph 64 to secure access to property, and Paragraph 69 (emergency response)).

- p. "Section" shall mean a portion of this Order identified by a Roman numeral.
- q. "Site" shall mean the Hartford Area Hydrocarbon Plume Site located adjacent to the Mississippi River in and around the Village of Hartford, Madison County, Illinois and depicted generally on the map attached as Appendix A.
- r. "State" shall mean the State of Illinois.
- s. "Work" shall mean all activities Respondents are required to perform under this Order.

IV. FINDINGS OF FACT

Based on the information known to EPA at the time of issuance of this Order, including the administrative record in this matter, EPA finds that:

9. The Site is located adjacent to the Mississippi River in and around the Village of Hartford, Madison County, Illinois and depicted generally in Appendix A.
10. Atlantic Richfield Company is a corporation organized under the laws of the State of Delaware, which is qualified to do business in the State of Illinois. During the period from 1980 to 1984, Atlantic through its affiliate ARCO Pipeline Company operated a 10-inch pipeline then owned by the New Sinclair Oil Corporation ("Atlantic/Sinclair pipeline") under an operating agreement that was terminated in 1990. In addition, in 1969, Atlantic merged with Old Sinclair Oil Corporation which from 1951 through 1967, owned and operated what became the former Clark Oil Refinery and the Atlantic/Sinclair pipeline. BP Products North America Inc., BP Pipelines (North America) Inc., and BP Amoco Chemical Company are affiliated with Atlantic Richfield and operated at a refinery in Wood River, IL, which closed in the 1980's.
11. The PREMCOR Refining Group Inc. is a corporation organized under the laws of the State of Delaware, which is qualified to do business in the State of Illinois. From 1988 to September 27, 2002, PREMCOR owned and operated an oil refinery (the "former Clark Oil Refinery") near the Village of Hartford. PREMCOR sold the process units of the former Clark Oil Refinery in July 2003, and no longer operates that Refinery, but continues to own the land on which that Refinery is located. PREMCOR continues to operate petroleum storage, distribution, and terminal operations at parts of the Refinery. From 1988 to the present, PREMCOR owned and operated three or more pipelines running through the Village of Hartford to a dock located on the Mississippi River.
12. SOP US is a limited liability corporation organized under the laws of Delaware which is qualified to do business in the State of Illinois. From 1917 to 2000, SOP US and/or its corporate predecessors owned and/or operated an oil refinery (the "Woodriver Refinery") and associated pipelines, in proximity to the Village of Hartford. From 1967 until the present, SOP

US and/or its corporate predecessors owned a tannery property located near the Village of Hartford.

13. The pipelines associated with the former Clark Oil Refinery include two sets of pipelines that extend from that Refinery west to the Refinery's River Dock on the Mississippi River (the "River Lines") and a second set of pipelines that ran northwest to the Hartford Wood River Terminal (the "Terminal Lines"). The first set of River Lines was installed in the early 1950's, and those pipelines were replaced by a second set in the 1980's. At various times during the course of operation of the former Clark Oil Refinery and the River Lines oil leaked from the River Lines into the ground.

14. The Terminal Lines were also constructed in the 1950's and ran from the former Clark Oil Refinery along Olive Street in the Village of Hartford, Madison County, Illinois. Old Sinclair Oil Corporation retained one of the Terminal Lines when it sold the Refinery to Clark Oil and Refining Corporation. Atlantic acquired that line when it merged with Old Sinclair Oil Corporation. Atlantic later transferred that line to New Sinclair in the early 1980's but agreed to operate the line for New Sinclair. During the operation of the Terminal Lines, including during the course of New Sinclair's ownership and Atlantic's operation of its pipeline, oil leaked from the Terminal Lines into the ground.

15. The pipelines associated with the Woodriver Refinery, which include a refined product pipeline, extend from the Woodriver Refinery west parallel to Rand Avenue north of the Village of Hartford. During the course of SOP US's and/or its corporate predecessors ownership of the pipelines, oil leaked from the pipelines into the ground.

16. The releases of oil from the pipelines described in Paragraphs 13 through 15 herein have commingled into a substantial subsurface pool in and around the Village of Hartford, Illinois.

17. Oil and vapors have migrated into the Village of Hartford's sewer system which directs sewage, other wastewater, and storm water to the City of Wood River Waste Water Treatment plant, which in turn discharges effluent to the Mississippi River. In addition, in a high precipitation event, the Village of Hartford's sewer system may discharge untreated effluent directly into the Mississippi River through an overflow weir located west of the Village of Hartford.

18. At certain times from at least 1966 to the present, oil and vapors have infiltrated into basements, crawl spaces and/or living spaces in some homes in the northern third of Hartford, generally between Hawthorne Street to the south and Rand Avenue to the north. There have been fires, explosions and evacuations as a result of these vapors.

19. Exposure to oil, including petroleum and its constituents, at certain concentrations can pose a threat to human health and the environment. Petroleum contains aliphatic

hydrocarbons, paraffins, tars, and aromatic hydrocarbon compounds. The health affects associated with petroleum are those of its associated hydrocarbon mixtures.

20. Air samples collected in May and June 2002, from basements and living spaces in homes in the northern third of Hartford detected the following constituents of oil:

a. Benzene was detected in concentrations ranging from 0.6 ppb to as great as 330 ppb. The Agency for Toxic Substances and Disease Registry ("ATSDR") acute minimum risk level for exposures to benzene of less than 14 days duration ("acute MRL") is 50 parts per billion ("ppb"). The ATSDR cancer risk evaluation guide for benzene is 0.03 ppb.

b. Toluene was detected in concentrations ranging from 3.8 ppb to as great as 810 ppb. The ATSDR chronic minimum risk level for exposures to toluene of more than 365 days duration ("chronic MRL") is 80 ppb while the acute MRL is 1,000 ppb.

c. n-Hexane was detected in concentrations ranging from <1 ppb to as great as 12,218 ppb. The ATSDR minimum risk level for chronic exposures to n-Hexane is 600 parts per billion ("ppb") while the EPA Reference Concentration is 56 ppb. Both values are based on neurological effects reported in a study of long-term occupational exposure to n-hexane.

21. The IDPH in a July 1, 2002, public health assessment concluded that the residential vapor intrusions in Hartford during the week of May 13, 2002, were a public health hazard in certain homes located in the Site. In a follow-up March 19, 2003, public health assessment, IDPH concluded that while the concentration levels of the substances described in Paragraph 20 may fluctuate over time, based on historical evidence vapor intrusions like those experienced in May 2002 could return and, therefore, the Site poses a public health hazard. Hartford residents have reported that vapor intrusions into homes are associated with rain events, a high level of the Mississippi River, and high water table.

22. Groundwater samples collected on May 21, 2001 from within the Site detected the following constituents of oil:

a. Benzene in concentrations as great as 22.6 milligrams per liter ("mg/l"). The Safe Drinking Water Act, 42 U.S.C. §§ 330f *et seq.* ("SDWA") Maximum Contaminant Level ("MCL") for benzene in drinking water is 0.005 mg/l.

b. Ethylbenzene in concentrations as great as 2.8 mg/l. The MCL for ethylbenzene in drinking water is 0.7 mg/l.

c. Toluene in concentrations as great as 28.6 mg/l. The MCL for toluene in drinking water is 1.0 mg/l.

d. Xylenes (total) in concentrations as great as 13.63 mg/l. The MCL for xylenes in drinking water is 10.0 mg/l.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the findings of fact in Section IV, above, and the administrative record in this matter, EPA has determined that:

23. The pipelines described in Paragraphs 10 through 16 herein owned and/or operated by Respondents, and any other pipelines added later to this Order, are each "onshore facilities" as defined by Section 311(a)(10) of CWA, 33 U.S.C. § 1321(a)(10) and by Section 1001(24) of the OPA.

24. Each Respondent is a "person" as defined by Section 311(a)(7) of CWA, 33 U.S.C. § 1321(a)(7) and by Section 1001(27) of OPA, 33 U.S.C. § 2701(27) and by Section 1004(15) of RCRA, 42 U.S.C. § 6903(15)..

25. Each Respondent is or was an "owner or operator" of one or more of the facilities as defined by Section 311(a)(6) of CWA, 33 U.S.C. § 1321(a)(6) and Section 1001(26) of OPA, 33 U.S.C. § 2701(26).

26. A "removal" as defined in Section 311(a)(8) of CWA, 33 U.S.C. § 1321(a)(8) and Section 1001(30) of OPA, 33 U.S.C. § 2701(30), is necessary at the Site to minimize and mitigate a threat to the public health or welfare.

27. Actual or threatened "discharges" as defined in Section 311(a)(2) of CWA, 33 U.S.C. § 1321(a)(2) and Section 1001(7) of OPA, 33 U.S.C. § 2701(7), have occurred at or from the facilities.

28. "Oil" as defined in Section 311(a)(1) of CWA, 33 U.S.C. § 1321(a)(1) and Section 1001(23) of OPA, 33 U.S.C. § 2701(23), is currently present at and around the Site.

29. The Mississippi River is a "navigable water" of the United States as defined in Section 502(7) of the CWA, 33 U.S.C. § 1362(7) and Section 1001(21) of OPA, 33 U.S.C. § 2701(21).

30. The Mississippi River is a "natural resource" within the meaning of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.5, and Section 1001(20) of OPA, 33 U.S.C. § 2701(20).

31. A discharge at or from an onshore facility may affect "natural resources", as defined in the NCP, 40 C.F.R. § 300.5, and Section 1001(20) of the OPA, 33 U.S.C. § 2701(20).

32. The Site may pose an imminent and substantial threat to the public health or welfare of the United States because of an actual or threatened discharge of oil from a facility in violation of Section 311(b) of CWA, 33 U.S.C. § 1321(b).

33. There are or have been releases, or substantial threats of releases, of oil into the environment from the facilities owned and/or operated by the Respondents.

34. The measures in this Order are necessary to abate, minimize, stabilize, mitigate or eliminate the discharge or threat of a discharge of oil at or from the Site.

35. Under Section 1002(b)(1) of OPA, 33 U.S.C. § 2702(b)(1), the Respondents are liable to the United States for the removal costs incurred by the United States in connection with the Site.

36. Oil has been released from the facilities in a manner constituting disposal under RCRA. Therefore, the Respondents are generators of solid waste, as that term is defined under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27), disposed of at the Site.

37. The Respondents' past handling of solid waste at the facilities may present an imminent and substantial endangerment to health or the environment.

VI. ORDER

The Respondents shall comply with the following requirements:

Designation of Contractor, Project Coordinator, and On-Scene Coordinator

38. Respondents shall retain a contractor(s) to investigate the source and extent of contamination, implement EPA approved interim measures, and design an Active Recovery System designed to abate the on-going threat of discharge to the Mississippi River and the imminent and substantial threat to health and the environment. At the time of the Effective Date of this Order, Respondents' EPA approved contractor(s) for the Site are ENSR International and Clayton Group Services, Inc. If at any time after the Effective Date of this Order, Respondents propose to change any contractor, Respondents shall give prior notice to EPA and shall obtain an authorization to proceed from EPA before the new contractor performs, directs, or supervises any Work under this Order. Such notice shall be in writing and include the name, title, and qualifications of any contractor proposed to be the supervising contractor.

39. If EPA disapproves a proposed contractor, EPA will notify Respondents in writing. Respondents shall submit to EPA a list of contractors, including the qualifications of each contractor, that would be acceptable to them within 30 days of receipt of EPA's disapproval of the contractor previously proposed. EPA will provide written notice of the names of any contractor(s) that it disapproves and an authorization to proceed with respect to any of the other contractors. Respondents may select any contractor from that list that is not disapproved and shall notify EPA of the name of the contractor selected within 21 days of receipt of EPA's authorization to proceed.

40. Respondents shall designate a Project Coordinator who will oversee Respondents' actions required by this Order. At the time of the Effective Date of this Order, Respondents' EPA approved Project Coordinators are Tom Mroz, PREMCOR, John Wigger, Atlantic, and Herb Hand, SOP US. To the greatest extent possible, the Project Coordinator shall be readily available by telephone during site work.

41. EPA has designated Steve Faryan and Kevin Turner of the Emergency Response Branch, Region 5, as its On-Scene Coordinators (OSC). Respondents shall direct all submissions required by this Order to Steve Faryan at the U.S. Environmental Protection Agency, 77 West Jackson Boulevard, Mailcode SE-5J, Chicago Illinois 60604-3590 and to Kevin Turner at 8588 Route 148, Marion, Illinois 62959. EPA encourages Respondents to use recycled paper (which includes significant post-consumer waste paper content where possible) and two-sided copies for all submissions to EPA.

42. EPA or Respondents may change the designated OSC or Project Coordinator. EPA will notify Respondents, and Respondents will notify EPA, as early as possible before making a change, but at least 24 hours before the change. The initial notice may be oral, but written notice shall follow promptly.

Work to Be Performed

43. In accordance with the Vapor Control System Evaluation Report dated December 10, 2003, and approved by EPA on December 26, 2003, Respondents shall conduct soil vapor extraction and free product hydrocarbon recovery pilot tests and report the results to EPA. The pilot test reports shall detail results and include recommendations. In addition, the report on the soil vapor extraction pilot test shall include a discussion of options for potentially improving and extending, as an interim measure, the existing vapor control system. The data from the soil vapor extraction pilot test and free product hydrocarbon recovery pilot test will be used in the design of the Active Recovery System described in Paragraph 55 of this Order. The Vapor Control System Evaluation Report requirements, including the major milestones identified in Appendix B to this Order, shall be enforceable under this Order.

44. Respondents shall implement the work plan titled Vapor Intrusion Mitigation Pilot Test Work Plan, submitted to EPA on October 30 and December 5, 2003, and approved by EPA on December 30, 2003. The work plan requirements, including the major milestones identified in Appendix B to this Order, shall be enforceable under this Order.

45. By no later than March 5, 2004, Respondents shall submit a response addressing EPA's February 6, 2004, comments on the work plan titled Site Investigation Plan and dated January 7, 2004. EPA shall review the response and either approve, conditionally approve with comments, or disapprove the response. If EPA disapproves the response, Respondents shall by no later than 15 days after such disapproval submit a revised response that addresses any deficiencies identified by EPA. Once EPA approves the response, Respondents shall implement

the work plan in a manner consistent with approved response. The work plan requirements, including major milestones within the schedule therein, shall be enforceable under this Order.

46. Respondents shall implement the work plan titled Interim Measures Work Plan, submitted to EPA on October 30 and December 5, 2003, and approved by EPA on December 30, 2003. The work plan requirements, including the major milestones identified in Appendix B to this Order, shall be enforceable under this Order.

47. Respondents shall implement the work plan titled Sentinel Wells Work Plan, dated October 16, 2003, and approved by EPA on November 21, 2003. The sentinel wells shall be sampled quarterly for the first year. These samples shall be analyzed for the "Skinner List" as outlined in the October 16, 2003, work plan. After the first year, a groundwater monitoring program shall be established consistent with the results of the dissolved phase groundwater investigation. EPA shall review the groundwater monitoring program and either approve, conditionally approve with comments, or disapprove the proposed monitoring program. If EPA disapproves the proposed monitoring program, Respondents shall by no later than 15 days after such disapproval submit a revised monitoring program that addresses any deficiencies identified by EPA. The work plan requirements, including the major milestones identified in Appendix B to this Order, shall be enforceable under this Order.

48. If EPA determines that interim improvements to the existing vapor control system are required, Respondents shall submit a work plan and proposed schedule for implementing those improvements within 30 days of receiving EPA's written notice of determination. EPA shall review the work plan and either approve, conditionally approve with comments, or disapprove the work plan. At a minimum, the work plan shall address installation of new wells, any expanded manifold system blower upgrades and specifications, control panel specifications and upgrades, any thermal treatment unit upgrades, and operation and maintenance of the system. If EPA disapproves the work plan, Respondents shall by no later than 15 days after such disapproval submit a revised work plan that addresses any deficiencies identified by EPA. Once EPA approves the work plan, Respondents shall implement the work plan. The work plan requirements, including major milestones within the schedule therein, shall be enforceable under this Order.

49. By no later than March 19, 2004, Respondents shall submit a Contingency Plan, which EPA shall review and either approve, conditionally approve with comments, or disapprove. If EPA disapproves the Contingency Plan, Respondents shall by no later than 30 days after such disapproval submit a revised Contingency Plan that addresses any deficiencies identified by EPA. Once EPA approves the Contingency Plan, Respondents shall implement the Contingency Plan. The Contingency Plan requirements, including major milestones within the schedule therein, shall be enforceable under this Order.

50. By no later than April 9, 2004, Respondents shall submit a Free Phase Hydrocarbon Monitoring Well and Soil Sampling Work Plan and proposed schedule, which EPA shall review and either approve, conditionally approve with comments, or disapprove. At a

minimum, the work plan shall address how the Respondents will delineate the extent of the free phase hydrocarbon plume. If EPA disapproves the work plan, Respondents shall by no later than 30 days after such disapproval submit a revised work plan that addresses any deficiencies identified by EPA. Once EPA approves the work plan, Respondents shall implement the work plan. The work plan requirements, including major milestones within the schedule therein, shall be enforceable under this Order.

51. By no later than June 30, 2004, Respondents shall submit a work plan and proposed schedule for the Dissolved Phase Groundwater Investigation, which EPA shall review and either approve, conditionally approve with comments, or disapprove. At a minimum, the work plan shall address installation, development, and sampling of monitoring wells, establishing groundwater gradient, and establishing the contours of the dissolved phase hydrocarbons. If EPA disapproves the work plan, Respondents shall by no later than 30 days after such disapproval submit a revised work plan that addresses any deficiencies identified by EPA. Once EPA approves the work plan, Respondents shall implement the work plan. The work plan requirements, including major milestones within the schedule therein, shall be enforceable under this Order.

52. By no later than June 30, 2004, Respondents shall submit a Utility and Pipeline Investigation Work Plan and proposed schedule, which EPA shall review and either approve, conditionally approve with comments, or disapprove. At a minimum, the work plan shall identify all utilities and pipelines (both active and inactive), to the maximum extent practicable or possible, within the Site and describe the investigation of free phase hydrocarbon and vapor infiltration into and/or along those utilities and pipelines. If EPA disapproves the work plan, Respondents shall by no later than 30 days after such disapproval submit a revised work plan that addresses any deficiencies identified by EPA. Once EPA approves the work plan, Respondents shall implement the work plan. The work plan requirements, including major milestones within the schedule therein, shall be enforceable under this Order.

53. By no later than 45 days from the date EPA approves the last site investigation report as referenced in Appendix B or as required pursuant to Paragraph 72 of this Order, the Respondents shall submit a proposal for an Active Recovery System based on the data from the comprehensive site investigation. Respondents' proposal shall, at a minimum, discuss the protectiveness, costs, long term effectiveness, and implementability of the proposed Active Recovery System.

54. EPA will review Respondents' Active Recovery System proposal and may: (a) approve the proposal as described by Respondents, (b) approve the proposal as modified by EPA, or (c) disapprove the proposal and select a different Active Recovery System.

55. By no later than 90 days after EPA approves the Active Recovery System, the Respondents shall submit a 90% design of the system. The design shall address contaminated groundwater, subsurface product and vapors and any collection, treatment and proper disposal of contaminated groundwater, product and vapors. The 90% submittal shall include, but is not

limited to, schedules, operation and maintenance plans, contingency plans, and health and safety plans. The 90 % submittal shall also include the following certification signed by a representative of each Respondent or Respondents collectively who supervised or directed the preparation of that report:

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true and complete.

56. Respondents shall not start or undertake any removal actions at the Site without prior EPA approval, except in emergency situations when notice will be given as soon as practicable as set forth in Paragraph 69. In addition, each Respondent shall provide timely notice to EPA of:

(a) any significant changes in the rate of groundwater pumping at off-Site locations controlled by Respondent(s) which Respondent(s) have shown through numerical modeling or conceptual understanding may affect the Work; and

(b) any discovery of contamination by Respondent(s) not previously reported to the EPA or IEPA, within or immediately adjacent to the Site.

The purpose of the notice described in Paragraph 56 is not to assert jurisdiction under this Order over Respondents' off-Site work or non-Work related on-Site activities, but to ensure that such activities do not interfere with the Work being performed under this Order.

Health and Safety Plan

57. Within 30 days of the effective date of this Order, Respondents shall submit, for EPA for review and comment, a draft plan that protects the public health and safety during performance of on-site work under this Order. This plan shall comply with applicable Occupational Safety and Health Administration (OSHA) regulations at 29 C.F.R. Part 1910. If EPA determines it is appropriate, the plan shall also include contingency planning. Respondents shall comply with the plan as approved by EPA.

Quality Assurance and Sampling

58. All sampling and analyses performed under this Order shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control, data validation, and chain of custody procedures. Respondents shall develop a plan to ensure the sampling and laboratory analysis complies with EPA quality assurance/quality control guidance.

59. Upon request by EPA, Respondents shall have a laboratory analyze samples that EPA submits for quality assurance monitoring. Respondents shall provide to EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing

data collection or analysis. Respondents also shall provide analytical tracking information consistent with OSWER Directive No. 9240.0-2B, "Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites."

60. Upon request, EPA or its authorized representatives may take split and duplicate samples of any samples collected by Respondents or their contractor or agent while performing work under this Order. Respondents shall notify EPA at least three business days in advance of any sample collection. EPA may take any additional samples that it deems necessary. EPA shall give the Respondents advance notice of its sampling activity so that Respondents may take split and duplicate samples.

Reporting

61. By the 15th day of each month, Respondents shall submit written progress reports to EPA, unless otherwise directed in writing by the OSCs. These reports shall describe: (a) all significant developments during the preceding period, including work performed, problems encountered, and analytical data collected, and (b) developments anticipated during the next reporting period, including a work schedule, anticipated problems, and planned resolutions of past or anticipated problems.

62. Each Respondent shall give written notice of this Order to any successor in interest at least 30 days prior to transferring ownership of any part of a facility described in this Order. Each Respondent also shall notify EPA and the State at least 30 days before the transfer, and shall include the name and address of the transferee. Each Respondent shall require the transferee to provide access as described in Paragraphs 64 and 65 (Access to Property and Information).

63. The OSCs may request either more or less frequent reports when the activities at the Site warrant a higher or lower reporting frequency.

Access to Property and Information

64. Respondents shall provide access to those areas of the Site they own, operate, or otherwise control and make their best efforts to obtain access to all other areas of the Site necessary for the implementation of this Order. In addition, Respondents shall provide or make their best efforts to obtain access to off-site areas where access is necessary to implement this Order and to all non-privileged documents related to conditions at the Site and Work conducted under the Order. Respondents shall provide this access to EPA, the United States Coast Guard ("USCG"), United States Fish and Wildlife Service ("USFWS"), IEPA and IDPH and their contractors and representatives. These individuals may move freely at the Site and appropriate off-site areas to: interview Respondents' personnel and contractors; review Respondents progress in carrying out the Order; conduct tests, sampling or monitoring which EPA deems necessary; use a camera, sound recording, or other documentary equipment; and, verify the reports and data submitted by Respondents to EPA. These individuals may inspect and copy all non-privileged

photographs and documents, including all sampling and monitoring data, that relate to the Work performed under the Order. Respondents may request split samples, or copies of photographs, tapes, videos, or other recorded evidence created by EPA and releasable under the Freedom of Information Act. In accordance with the requirements and procedures of 40 C.F.R. Part 2, Subpart B, Respondents may assert a claim of business confidentiality as to any photographs, video or documents obtained during any such access.

65. As described in Paragraph 64 and as determined by EPA, Respondents shall make their best efforts to obtain access to areas not owned, operated, or otherwise controlled by Respondents to perform work required by this Order. EPA's OSCs will notify Respondents when such access is required and Respondents will have 14 days (or such greater time as the OSCs may specify) from the date of such notification to make their best efforts to obtain access. Any access agreement shall give EPA, the USCG, USFWS, IEPA and IDPH and their contractors and representatives access. If Respondents do not obtain the access agreements, they shall notify EPA immediately in writing, describing their efforts to obtain access. EPA may, at its discretion, assist Respondents in obtaining access.

Record Retention, Documentation, Availability of Information

66. Respondents shall retain all written, electronic, or illustrative documents relating to this Order for three years after completing the Work required by the Order. "Documents relating to this Order" include documents concerning the quantities and types of materials removed off-site or handled on-site, the ultimate destinations of those materials, the analytical results of all sampling and analyses performed, manifests, invoices and bills (or billing records establishing cost financial information), any permits required for the conduct of the Work, ownership and operation (e.g., pipeline integrity tests) of facilities and utilities located within or near the Site, petroleum releases within or near the Site, and human health and exposure issues within the Site, but do not include drafts of final documents. Before destroying any such documents, Respondents shall notify EPA that the documents are available to EPA for inspection and, upon request, shall provide the originals or copies of the documents to EPA. In addition, Respondents shall provide these documents at any time before the three year period expires at the written request of EPA. If Respondents believe any documents relating to this Order are privileged, Respondents shall provide a privilege log listing each such document: (a) the date, title, and subject matter, (b) the author(s), (c) all recipients and their affiliation, and (d) the privilege claimed.

67. Except as set forth herein or otherwise authorized by any citizen of Hartford, Respondents shall not disclose personal information about citizens of the Hartford area obtained by or provided to any of them in the conduct of the Work required under this Order, subject to any discovery requirements or subpoenas in any legal proceeding. Such personal information shall include the name of any citizen, his/her phone number(s), house number, medical or health data, age and sex of any minor child residing with him/her, photograph or other visual representation, voice recording, times when his/her residence may be unoccupied, and needs assessment information. Respondents agree that they may only use such information obtained by

or provided to any of them in the conduct of the Work required under this Order for purposes of satisfying requirements of this Order or a subsequent Implementation Order. Notwithstanding any of the foregoing, Respondents shall make such information available to EPA, IEPA, IDPH or the Hartford Fire Department upon request.

Compliance With Other Laws

68. Respondents shall perform all Work required under this Order according to all applicable local, state, and federal laws and regulations.

Emergency Response and Notification of Discharges

69. If any incident or change in Site conditions relating to the existing subsurface pool of oil causes or threatens to cause a discharge of oil or an endangerment to the public health, welfare, or the environment, upon discovery Respondents shall immediately take all appropriate actions to prevent, abate or minimize the discharge or endangerment. If any other release of oil, contaminant, or hazardous substance or change in Site conditions caused by Respondent(s), causes or threatens to cause a discharge of oil, contaminant, or hazardous substance to the Site or an endangerment to the public health, welfare, or the environment, the responsible Respondent(s) shall immediately take all appropriate actions to prevent, abate or minimize the discharge or endangerment. In either case, the Respondents or Respondent(s), as appropriate, also shall notify immediately the OSC, or if he is unavailable, shall notify the Regional Duty Officer, Emergency Response Branch, Region V at (312) 353-2318 of the incident, Site and/or facility conditions. If the Respondents or Respondent(s), as appropriate, fail to respond to the discharge or endangerment, EPA and/or the USCG may respond and may recover costs associated with that response that are not inconsistent with the NCP.

70. After any event covered by Paragraph 69, the Respondents or Respondent(s), as appropriate, shall submit a written report to EPA within seven business days after the event, stating the events that occurred and the measures taken or to be taken to mitigate any discharge or endangerment caused or threatened by the discharge and to prevent the reoccurrence of a discharge. The Respondents or Respondent(s), as appropriate, shall comply with any other applicable Federal, State, and local notice requirements, including but not limited to, those in Section 311 of the CWA, 33 U.S.C. § 1321; Section 103 of CERCLA, 42 U.S.C. § 9603; and Section 304 of the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 11004.

Additional Work

71. If EPA or the Respondents determine that Work not included in any Work Plan is necessary to protect human health or the environment, that party shall notify the other party of the additional Work. EPA shall approve or disapprove in writing any additional Work that all Respondents as a group determine is necessary. Any one Respondent or less than all Respondents may not unilaterally determine that additional work is necessary.

72. Respondents shall complete any additional Work required or approved by EPA according to EPA's specifications. Respondents shall propose and submit a schedule for additional Work for EPA approval. EPA may modify or determine the schedule for additional Work.

VII. AUTHORITY OF THE EPA ON-SCENE COORDINATOR

73. The OSCs will oversee this Order's implementation. The OSCs have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any work required by the Order, or to direct any other response action undertaken by EPA or Respondents at the Site. The OSCs' absence from the Site will not cause a work stoppage unless specifically directed by the OSCs.

VIII. REIMBURSEMENT OF COSTS

74. Respondents shall reimburse the United States for all Response Costs incurred by EPA, its contractors and other authorized representatives in overseeing and performing work under this Order. EPA will submit bills and accountings to Respondents for these costs on an annual basis.

75. Within 30 calendar days of receiving a bill and accounting, Respondents shall pay those costs to the USCG by check or by electronic transfer, as directed by the OSCs. Interest at a rate established in 4 C.F.R. § 102.13, pursuant to 40 C.F.R. § 13.11(a), will begin to accrue on the unpaid balance 31 days after payment was due notwithstanding any dispute or an objection to the costs. Respondents shall send the check to:

United States Coast Guard - Oil Pollution
Re: FPN E04503
P.O. Box 7777-W7615
Philadelphia, Pennsylvania 19175-7615

76. Respondents shall write the Site name and FPN E04503 on the face of the check. Respondents shall send simultaneously a copy of the check to the OSC.

77. Prior to payment, Respondents may dispute all or part of a bill for costs described above and submitted under this Order, if Respondents allege that EPA has made an accounting error, or if Respondents allege that a cost item is inconsistent with the NCP.

78. If the parties resolve a dispute over costs before payment is due, EPA will adjust the amount due as necessary. If the parties do not resolve the dispute before payment is due, Respondents shall pay the uncontested costs to the USCG as specified above on or before the due date. Within the same time period, Respondents shall pay the contested costs into an interest-bearing escrow account. Respondents simultaneously shall transmit a copy of both checks to the

OSCs. Respondents shall ensure that the prevailing party in the dispute receives the amount upon which it prevailed from the escrow funds plus interest within 20 days at the conclusion of dispute resolution.

IX. DISPUTE RESOLUTION

79. The Parties will use diligent and good faith efforts to informally and expeditiously resolve all disputes or differences of opinion. The invocation of dispute resolution procedures under this Section shall stay only those deadlines regarding obligations of the Respondents under this Order that are directly in dispute, unless EPA agrees other obligations should be stayed. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraphs 82 and 90 of this Order.

80. If the Parties do not resolve the dispute within 30 days, either Party may object in writing. The objection shall state the specific points in dispute, the position of the complaining Party, the technical basis, and any matter the complaining Party considers necessary to resolve the dispute. Within ten days of receiving the objection, the other Party will respond in writing, stating the basis for its position and including any supporting documents. The Parties will attempt to resolve their differences for five business days after receipt of the response.

81. EPA will maintain an administrative record of the dispute, containing the notice of dispute, the response, and supporting documents.

82. If EPA concurs with Respondents' position, EPA will notify Respondents in writing and the Parties will modify this Order according to Section XVIII (Modification) to include any necessary time extensions or work variances. If EPA does not concur with Respondents' position, Respondents shall submit a written notice requesting review by the Division Director of the Superfund Division, Region 5 who will resolve the dispute based upon the administrative record and consistent with the terms and objectives of this Order. Respondents written request for review by the Director shall not be submitted prior to expiration of the dispute resolution periods described in Paragraphs 79 and 80 of this Order.

83. Respondents shall complete work and reports not affected by the dispute according to the schedules in Paragraphs 43 through 56 and Appendix B or as required pursuant to Paragraph 72.

84. Respondents have the burden of proving that EPA's position is inconsistent with, or Respondents proposed resolution of the issues in dispute better satisfies the requirements of, this Order or the NCP.

X. FORCE MAJEURE

85. A force majeure event is an event beyond the control of Respondents, or any entity controlled by any Respondent, that Respondent(s) could not have reasonably foreseen and

that delays or prevents the timely performance of an obligation under this Order despite Respondents' best efforts. Unanticipated or increased costs and changed financial circumstances are not events beyond the control of Respondents.

86. Respondents shall notify the OSC orally as expeditiously as possible but in no event later than 48 hours after learning of an event that Respondents contend is a force majeure event, and in writing within 7 days after the event. The notice shall describe the anticipated length of delay, including necessary demobilization and re-mobilization; the cause(s) of the delay; past and proposed actions to prevent or minimize the delay; and a schedule to carry out those actions. Respondents shall take all reasonable measures to avoid or minimize the delay. If Respondents fail to notify the OSC according to this Section, Respondents will not receive an extension of time for performance. Respondents have the burden of demonstrating by a preponderance of the evidence that the event is a force majeure event and that the delay is warranted under the circumstances.

87. If EPA determines a force majeure event caused or will cause a violation of a requirement of this Order, EPA will extend the time period to comply with that requirement. The extension of time will not alter Respondents' obligation to perform other tasks required by the Order that are not directly affected by the force majeure event.

XI. STIPULATED AND STATUTORY PENALTIES

88. For each day, or portion thereof, that Respondents fail to comply timely with any requirement of this Order, Respondents shall pay stipulated penalties as follows:

	<u>Penalty per violation per day and period of violation</u>			
	<u>1 - 10 DAYS</u>	<u>11 - 30 DAYS</u>	<u>31 - 60 DAYS</u>	<u>OVER 60 DAYS</u>
Failure to meet a major milestone	\$ 500	\$ 2,000	\$ 4,000	\$ 8,000
Failure to submit a report or maintain records	\$150	\$ 750	\$ 1,500	\$ 2,500

For the purposes of this Paragraph, "major milestone" shall mean each of the commitments and dates listed in Appendix B to this Order, the submission date(s) for the work plans required pursuant to Paragraphs 48 through 52 of this Order and those dates identified in such EPA approved work plans as major milestones, and the dates specified in Paragraphs 53 and 55.

89. Respondents shall pay any stipulated penalties within 20 days of receiving EPA's written demand. Respondents shall pay interest on late payments and use the payment method specified in Section VIII of this Order (Reimbursement of Costs).

90. Separate penalties shall accrue simultaneously for separate violations of this Order. Penalties accrue per violation, per day. Penalty payment shall not alter Respondents' obligations to perform the Work required under this Order. Stipulated penalties shall accrue, but need not be paid, during any dispute resolution period concerning the particular violation at issue. However, stipulated penalties shall not accrue with respect to a decision by the Division Director of the Superfund Division, Region 5, under Paragraph 82 of Section IX (Dispute Resolution), during the period, if any, beginning on the date that Respondents submit a written notice requesting review by the Division Director of the Superfund Division, Region 5 until the date that the Director issues a final decision regarding such dispute. If Respondents prevail upon resolution, Respondents shall pay only the penalties that the resolution requires, if any.

91. Nothing in this Order shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of any Respondents' violation of this Order or of the statutes and regulations upon which it is based, including, but not limited to, Section 311(b)(7)(B) of the CWA, 33 U.S.C. 1321(b)(7)(B) and Section 7003(b) of RCRA, 42 U.S.C. 6973(b), as adjusted by The Debt Collection Improvement Act of 1996, 31 U.S.C. 3701. However, EPA shall not seek statutory penalties for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of the Order. Any EPA determination to seek statutory penalties shall not be subject to dispute resolution under this Order. Respondents reserve the right to raise, as limited by Paragraph 5 of this Order, equitable and legal defenses in any action to collect statutory penalties. Should Respondents violate the Order, EPA may carry out the required actions unilaterally under Section 311(c) of CWA, 33 U.S.C. 1321(c), and may seek judicial enforcement of the Order under Section 311(e) of CWA, 33 U.S.C. 1321(e) and Section 7003(b) of RCRA, 42 U.S.C. 6973(b).

XII. OTHER CLAIMS

92. This Order does not limit or affect the rights of the parties against any third party, nor does it limit the rights of third parties.

XIII. INDEMNIFICATION

93. Respondents agree to indemnify, save and hold harmless the United States, its agencies, agents, contractors, subcontractors, employees and representatives from any claim or cause of action arising from, or on account of, acts or omissions of Respondents or their officers, heirs, directors, employees, agents, contractors, subcontractors, receivers, trustees, successors or assigns in carrying out actions under this Order. Nothing in this Order, however, requires Respondents to indemnify the United States for any claim or cause of action based on negligent action taken solely and directly by EPA (not including oversight or approval of Respondents's plans or activities).

XIV. COVENANT NOT TO SUE BY EPA

94. In consideration of the past actions and future actions that will be performed and the payments that will be made by Respondents under the terms of this Order, and except as otherwise specifically provided in this Order, EPA releases and covenants not to sue or take administrative action against Respondents pursuant to the CWA, RCRA, or OPA for performance of the Work or for recovery of Response Costs. This release and covenant not to sue shall take effect upon the Effective Date and are conditioned upon the complete and satisfactory performance by Respondents of all obligations under this Order, including, but not limited to, payment of Response Costs. This release and covenant not to sue extend only to Respondents as defined herein and do not extend to any other person.

XV. RESERVATION OF RIGHTS BY EPA

95. Except as specifically provided in this Order, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary but not inconsistent with the Covenant Not to Sue By EPA in Section XIV above, or from requiring Respondents in the future to perform additional activities pursuant to RCRA, CWA, OPA or any other applicable law.

96. The covenant not to sue set forth in Section XIV above does not pertain to any matters other than those expressly identified herein. EPA reserves, and this Order is without prejudice to, all rights against Respondents with respect to all other matters, including, but not limited to:

- a. claims based on a failure by Respondents to meet a requirement of this Order;
- b. liability for costs not included within the definition of Response Costs;
- c. liability for performance of response action other than the Work;
- d. criminal liability;
- e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- f. liability arising from the past, present, or future disposal, release or threat of release of oil outside of the Site;

- g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site;
- h. liability for costs incurred if EPA assumes the performance of the Work pursuant to Paragraph 97; and
- i. subrogated claims under Section 1015 of OPA, 33 U.S.C. § 2715, for any amounts paid or to be paid by the Oil Spill Liability Trust Fund to any person for removal costs or damages in connection with the spill of oil

97. **Work Takeover.** In the event EPA determines that Respondents have ceased implementation of any portion of the Work, are materially deficient or late in their performance of the Work, or are implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Respondents may invoke the procedures set forth in Section IX (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Notwithstanding any other provision of this Order, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XVI. COVENANT NOT TO SUE BY RESPONDENTS

98. Respondents covenant not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Response Costs, or this Order, including, but not limited to:

- a. any direct or indirect claim for reimbursement from the Oil Spill Liability Trust Fund; or
- b. any claim arising out of the Work or arising out of the response actions for which the Response Costs have or will be incurred, including any claim under the United States Constitution, the Illinois Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law.

99. Respondents' covenant not to sue shall not apply in the event the EPA brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 96 (b), (c), and (e) - (g), but only to the extent that Respondents' claims arise from the same response action, response costs, or damages that the EPA is seeking pursuant to the applicable reservation.

XVII. CONTRIBUTION

100. The Parties agree that nothing in this Order limits or in any other way affects any protection from contribution actions or claims under the CWA, RCRA, and OPA, to which Respondents may be entitled pursuant to Federal and State statutes and common law for the matters addressed in this Order. The "matters addressed" in this Order are the Work performed

by Respondents pursuant to this Order and any Response Costs paid by Respondents under this Order. Nothing in this Order precludes the United States or Respondents from asserting any claims, causes of action, or demands against any persons not Parties to this Order for indemnification, contribution, or cost recovery.

XVIII. MODIFICATIONS

101. The OSCs may modify any plan or schedule in writing, or orally. The OSCs shall memorialize an oral modification in writing within seven business days; however, the modification will be effective on the date of the OSCs' oral direction. The Parties may modify any other requirement of this Order in writing by mutual agreement.

102. Additional persons may consent to be added as Respondents subject to this Order by agreeing to assume the same obligations imposed on the other Respondents and signing an appropriate addendum to this Order. Any such addendum shall be signed by all Parties to the Order to become effective.

103. If Respondents seek permission to deviate from any approved plan or schedule, Respondents' Project Coordinator shall submit a written request to the OSCs for approval outlining the proposed modification and its basis.

104. No informal advice, guidance, or comment by the OSCs regarding reports, plans, schedules, or any other writing submitted by Respondents will alter Respondents' obligations to obtain formal approval as may be required by this Order, and to comply with all requirements of the Order unless it is formally modified.

XIX. TERMINATION and NOTICE OF COMPLETION

105. In the event EPA and Respondent(s) enter into a subsequent consent order for implementation of the Active Recovery System referenced in Paragraph 55, which shall include all incomplete and continuing obligations under this Order, this Order shall terminate with respect to each Respondent party to the implementation order upon the effective date of the implementation order.

106. With respect to any Respondent(s) who do not enter into a consent order for implementation, this Order will terminate when such Respondent(s) demonstrate in writing and certify to the satisfaction of EPA that all activities required under this Order, including any additional work, payment of past costs, response and oversight costs, and any stipulated penalties demanded by EPA, have been performed and EPA has approved the certification.

XX. SEVERABILITY/INTEGRATION/APPENDICES

107. If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order,

Respondents shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

108. This Order and its appendices constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Order. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Order. The following appendices are attached to and incorporated into this Order:

Appendix A: Site Map
Appendix B: Major Milestones

XXI. PUBLIC REVIEW OF ADMINISTRATIVE RECORD

109. The administrative record supporting the issuance of this Order will be available for public review at EPA's offices at 77 West Jackson Boulevard, Chicago, Illinois on Mondays through Fridays, from 8:30 a.m. to 5:00 p.m. by contacting:

Janet Pfundheller
U.S. EPA, Region 5
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590

In addition, EPA has established a repository for documents related to the Site at the Hartford Public Library, located at 143 West Hawthorne in the Village of Hartford, Illinois.

XXII. PUBLIC COMMENT AND EFFECTIVE DATE

110. Immediately upon issuance of this Order, EPA will announce the availability of this Order to the public for review and comment. EPA will accept comments from the public for a period of fourteen (14) calendar days after such announcement. If sufficient interest warrants, as determined by EPA, a public meeting will be held. At the end of the comment period, EPA will review all comments received during the comment period and/or at any public meeting. EPA will forward to Respondents a copy of all such comments and EPA's written response to such comments, whereupon Respondents shall have an opportunity to respond. EPA shall then either:

- a. determine that the Order should be made effective in its present form in which case Respondents shall be notified in writing. The Order shall become effective on the date Respondents receive such notification; or
- b. determine that modification of the Order is necessary, in which case Respondents will be informed as to the nature of all required changes. If Respondents agree to the modifications, the Order shall be so modified and shall become effective upon signature of the parties. If Respondents

do not agree to the modifications, the Respondents may withdraw their consent to the Order.

111. Immediately upon issuance of an Order which includes significant changes in response to public comment, EPA will announce the availability of this Order to the public for additional review and comment. Any additional review and comment will be in accordance with the procedures described in Paragraph 110 above.

XXIII. NO FINAL AGENCY ACTION

112. Notwithstanding any other provisions of this Order, no action or decision by EPA shall constitute final agency action giving rise to any rights to judicial review prior to EPA's initiation of judicial action to compel Respondents' compliance with the mandate(s) of this Order.

XXIV. SIGNATORIES

113. The undersigned representative of each Respondent and the EPA, Region 5 Regional Administrator certifies that he or she is authorized to enter into the terms and conditions of this Order and to execute and bind legally such Party to this document.

The Atlantic Richfield Company, on behalf of itself and its related companies named herein, enters into this Consent Order in the matter of the Hartford Area Hydrocarbon Plume Site.

BY:  DATE: 

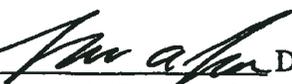
Luke Keller
Vice President, Operations - Americas
Atlantic Richfield Company

Equilon Enterprises LLC dba Shell Oil Products US, on behalf of itself and its related companies named herein, enters into this Consent Order in the matter of the Hartford Area Hydrocarbon Plume Site.

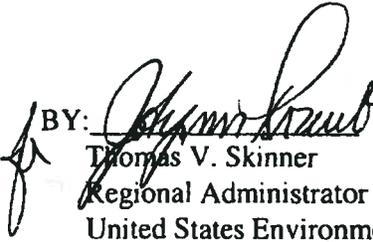
BY:  DATE: 3/15/04
Rudy Goetzee

TITLE: VP Manufacturing SOPUS/MOTU

The PREMCOR Refining Group Inc., on behalf of itself and its related companies named herein, enters into this Consent Order in the matter of the Hartford Area Hydrocarbon Plume Site.

BY:  DATE: 3/15/04
Bruce A. Jones
Vice President - Environment, Health and Safety

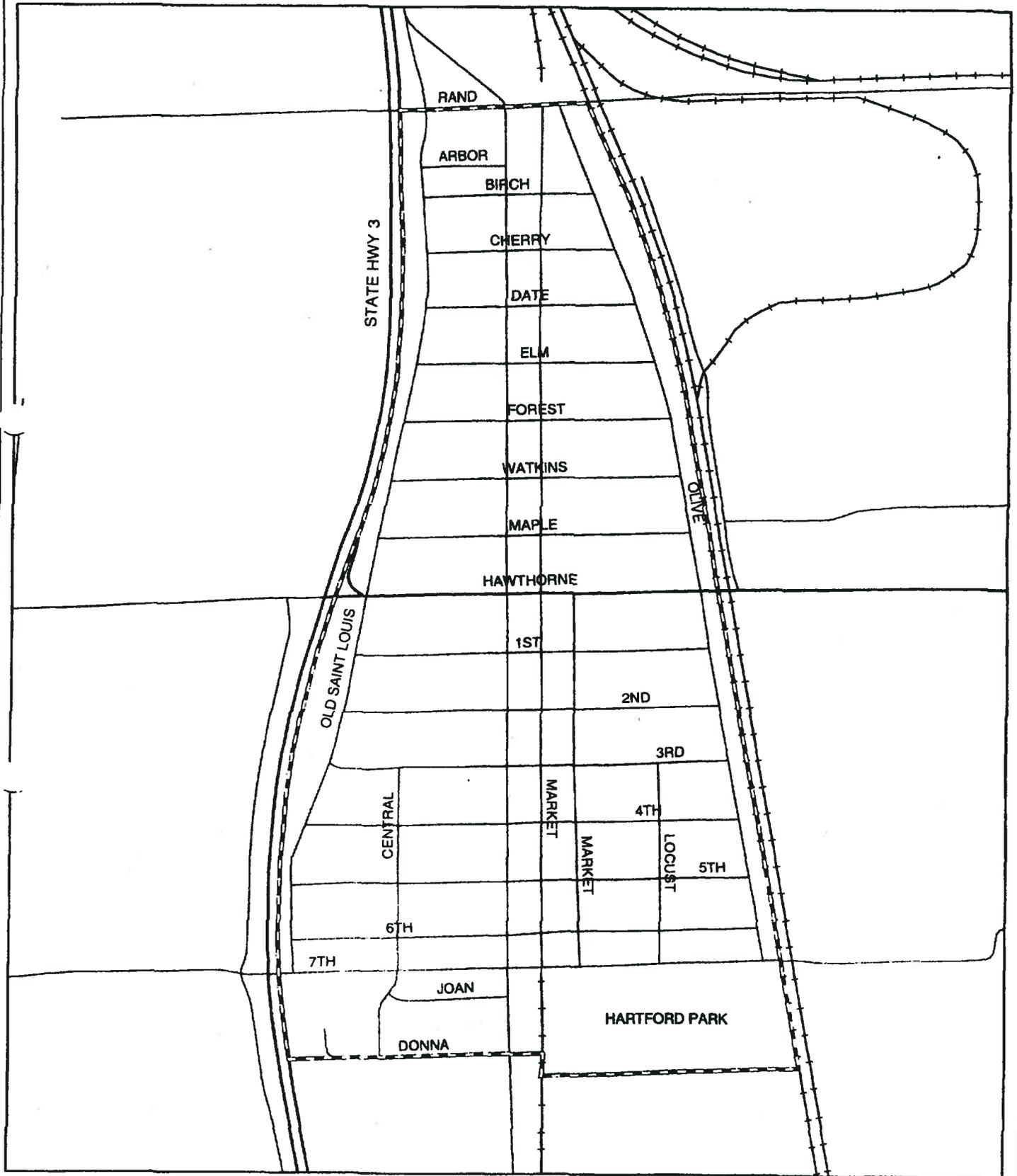
IT IS SO ORDERED AND AGREED:

BY:  DATE: 3/17/04
Thomas V. Skinner
Regional Administrator
United States Environmental Protection Agency
Region 5

Appendix A

Site Map

Hartford Site Boundary



--- Site Boundary
--- Railroads

0 500 1,000
Feet

**Appendix B
Major Milestones**

Response to Reports of Vapor Intrusion

Submit Contingency Plan (Par 49)	03/19/04
Comply with Contingency Plan Requirements (Par 49)	As set forth in the Section of the Plan titled "Major Milestones"

Vapor Control System Report

Submit Soil Vapor Extraction Pilot Test Report (Par 43)	03/04/04
Initiate Free Phase Hydrocarbon Recovery Pilot Test (Par 43)	Initiated
Submit Free Phase Hydrocarbon Recovery Pilot Test Report (Par 43)	05/15/04
Initiate Multi-Phase Extraction Pilot Test (Par 43)	06/01/04
Submit Multi-Phase Extraction Pilot Test Report (Par 43)	08/27/04
Submit Work Plan for Proposed Improvements to Vapor Control System (Par 48)	Within 30 days of EPA's written request

Vapor Intrusion Mitigation Pilot Test Work Plan

Submit Vapor Intrusion Mitigation Pilot Test Report (Par 44)	05/01/04
--	----------

Site Investigation Plan

Submit Response to EPA Comments on the Site Investigation Work Plan (Par 45)	03/05/04
Complete ROST Investigation Field Work (Par 45)	Completed
Submit ROST Investigation Report (Par 45) and Free Phase Hydrocarbon Monitoring Well and Soil Sampling Work Plan (Par 50)	04/09/04
Submit Work Plan for Additional Investigation of Dissolved Phase Groundwater Contamination (Par 51)	06/30/04

Submit Utility and Pipeline Investigation Work Plan (Par 52)	06/30/04
Submit Free Phase Hydrocarbon Report (Par 45)	08/27/04
Submit Report on Utility and Pipeline Investigation (Par 45)	12/03/04
Submit Report on Additional Investigation of Dissolved Phase Groundwater Contamination (Par 51)	12/24/04
Interim Measures Work Plan	
Submit Vapor Migration Pathway Assessment Work Plan (Par 46)	Submitted
Submit Results of Needs Assessment with Recommendations (Par 46)	Submitted
Submit Results of Additional Needs Assessments with Recommendations	As required pursuant to Paragraphs 71 and 72
Submit Vapor Migration Pathway Assessment Report (Par 46)	06/01/04
Submit Report Documenting Installation and Describing Operation and Maintenance of In-Home Systems (Par 46)	30 days after installation of each system
Sentinel Wells Quarterly Monitoring	
Monitor, inspect, and maintain Sentinel Wells (Par 47)	quarterly, for the first year and thereafter in accordance with the monitoring program developed under Paragraph 47
Submit Sentinel Well Monitoring Results (Par 47)	by the 15 th of April, July, October and January for the first year and thereafter in accordance with the monitoring program developed under Paragraph 47

Final Remediation Plan

Submit Proposal for Active Recovery (Par 53)

45 days after EPA
approves final
Investigation report

Submit 90% Design Report for Active Recovery System (Par 55)

90 days after EPA
approves proposal for
active recovery

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

EPA Region 5 Records Ctr.



288461

IN THE MATTER OF	)	DOCKET NO. R7003-5-04-001,
	)	CWA1321-5-04-001
The Hartford Area Hydrocarbon Plume Site	)	Proceeding Under Section 7003
	)	of the Resource Conservation
	)	and Recovery Act, as amended,
Atlantic Richfield Company	)	42 U.S.C. § 6973, and
Equilon Enterprises LLC	)	Section 311 of the Clean
dba Shell Oil Products US	)	Water Act, 33 U.S.C. § 1321
The PREMCOR Refining Group Inc.)	
The Sinclair Oil Corporation)	
)	
Respondents)	

ADDENDUM ADDING PARTY TO ADMINISTRATIVE ORDER ON CONSENT

1. This is an addendum adding a Party to the June 24, 2004, Administrative Order on Consent ("Order") issued by the United States Environmental Protection Agency (EPA) and entered into voluntarily by Atlantic Richfield Company ("Atlantic"), Equilon Enterprises LLC dba Shell Oil Products US ("SOP US"), and The PREMCOR Refining Group Inc. ("PREMCOR") under Section 7003 of the Resource Conservation and Recovery Act (RCRA), as amended, 42 U.S.C. § 6973 and Sections 311(c) and (e), of the Clean Water Act (CWA), 33 U.S.C. § 1321(c) and (e).

2. Except as specifically described herein, this Addendum does not modify the Order or any report, plan, or schedule approved by EPA pursuant to the Order.

3. Terms used in this Addendum shall have the meaning assigned to them in the CWA, Oil Pollution Act of 1990, 33 U.S.C. §§ 2701 *et seq.* ("OPA"), or RCRA or in regulations promulgated under those statutes, or as otherwise set forth in Section III of the Order.

4. Pursuant to Paragraph 102 of the Order, additional persons may consent to be added as Respondents subject to the Order by agreeing to assume the same obligations imposed on the other Respondents and signing an appropriate addendum to the Order. Any such addendum must be signed by all Parties to the Order to become effective.

5. With this Addendum, the Sinclair Oil Corporation incorporated under the laws of Wyoming in 1976 (referred to as "New Sinclair Oil Company" or "New Sinclair" in the Order) is added as a Respondent under the Order, is made subject to the same obligations imposed on other Respondents under the Order, and is entitled to the same rights and privileges granted therein to the other Respondents. Sinclair's consent to the Order is not an admission of liability or of EPA's findings of facts or conclusions of law and determinations set forth in Sections I through V of the Order.

6. The definition of "Respondents" set forth in Section III of the Order is revised as follows:

"Respondents" shall collectively mean Equilon Enterprises LLC dba Shell Oil Products US (including its related companies Shell Oil Company, Shell Chemical LP and Shell Pipeline Company LP) (SOPUS) and their corporate predecessors, Atlantic Richfield Company (including its related companies ARCO Pipeline Company, BP Products North America Inc., BP Pipelines (North America) Inc. and BP Amoco Chemical Company) (Atlantic) and their corporate predecessors, the PREMCOR Refining Group Inc. (including its related companies PREMCOR Inc. and PREMCOR USA) (Premcor), and the Sinclair Oil Corporation ("New Sinclair").

7. Pursuant to Paragraph 40 of the Order, New Sinclair's Project Coordinator is:

Joseph D. Maffucio
Vice-President, Engineering, Health, and Safety
Sinclair Oil Corporation
550 East South Temple
P.O. Box 30825
Salt Lake City, Utah 84130-0825

8. EPA has notified the State of Illinois of this Addendum.

9. The undersigned representative of each Respondent and the EPA, Region 5 Regional Administrator certifies that he or she is authorized to enter into the terms and conditions of this Addendum and to execute and bind legally such Party to this document.

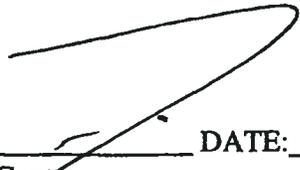
10. This Addendum is effective upon the date it is signed by EPA.

The Atlantic Richfield Company, on behalf of itself and its related companies named in the Order, enters into this Addendum to the Order in the matter of the Hartford Area Hydrocarbon Plume Site.

BY: AKELLOR DATE: 12 SEP 05

Luke Keller
Vice President, Operations - Americas
Atlantic Richfield Company

Equilon Enterprises LLC dba Shell Oil Products US, on behalf of itself and its related companies named in the Order, enters into this Addendum to the Order in the matter of the Hartford Area Hydrocarbon Plume Site.

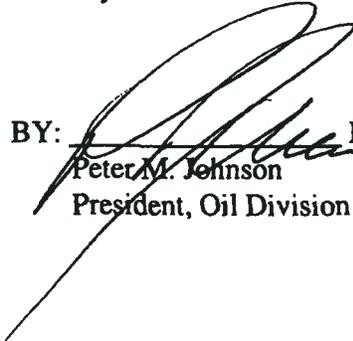

BY: _____ DATE: 9/13/05
Rudy Goetze,
VP Manufacturing SOPUS/Motiva

The PREMCOR Refining Group Inc., on behalf of itself and its related companies named in the Order, enters into this Addendum to the Order in the matter of the Hartford Area Hydrocarbon Plume Site.

BY: Norm Renfro DATE: 11/2/05
Norm Renfro,
Vice President Health Safety & Environmental
on behalf of The Premcor Refining Group Inc.

The Sinclair Oil Corporation enters into this Addendum to the Order in the matter of the Hartford Area Hydrocarbon Plume Site.

BY:


Peter M. Johnson
President, Oil Division

DATE: 11/12/05



Addendum to the Order in the matter of the Hartford Area Hydrocarbon Plume Site.

IT IS SO ORDERED AND AGREED:

BY: 

Thomas V. Skinner

Regional Administrator

United States Environmental Protection Agency

Region 5

DATE: 11-22-05

APPENDIX B

July 28, 2008, *Order and Terms of Injunction Pursuant to Fed. R. Civ. P. 65(d)*
entered in *United States v. Apex Oil Co.*, 2008 WL 7836308 (S.D. Ill. 2008)

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF ILLINOIS**

UNITED STATES OF AMERICA,

Plaintiff,

v.

APEX OIL COMPANY, INC.

Defendant.

No. 05-CV-242-DRH

ORDER AND TERMS OF INJUNCTION
PURSUANT TO FED. R. CIV. P. 65(d)

HERNDON, Chief Judge:

Defendant Apex Oil Company, Inc. is hereby enjoined as follows:

1. Defendant shall continue the implementation of the In-Home Interim Measures program at the Hartford Site – in accordance with the U.S. EPA-approved Revised Effectiveness Monitoring Plan (Pl. Ex. 250) – including maintaining all In-Home Interim Measures for vapor intrusion mitigation, performing periodic monitoring, and responding to situations arising under the U.S. EPA-approved Contingency Plan.

2. Defendant shall continue the operation and maintenance of the area-wide Vapor Control System that operates as an Interim Measure for vapor intrusion mitigation at the Hartford Site, and shall ensure that all elements of the System continue to operate at adequate capacities and efficiencies.

3. Defendant shall continue periodic groundwater monitoring at the Hartford Site in a manner that is consistent with the existing Quarterly Groundwater

Monitoring Program and the Sentinel Well Monitoring Program.

4. Defendant shall construct, operate, and maintain all components of the Active LNAPL Recovery System remedy – in accordance with the Active LNAPL Recovery System 90% Design (Pl. Ex. 206) and U.S. EPA's prior written comments and qualifications in accepting the 90% Design – to abate the light non-aqueous phase liquid hydrocarbon contamination beneath the Village of Hartford.

5. Defendant shall complete the investigation of groundwater contamination at the Hartford Site and design and implement a groundwater treatment remedy to abate the dissolved phase hydrocarbon contamination at the Hartford Site and all associated conditions that present or may present an imminent and substantial endangerment to health or the environment.

6. Defendant shall investigate the conditions relevant to the potential migration of groundwater contamination from beneath the Hartford Refinery to beneath the Village of Hartford and shall design and implement a program to abate any conditions that contribute, or may in the future contribute, to petroleum hydrocarbon contamination beneath the Village.

7. Defendant shall take such other action as may be necessary to abate the hydrocarbon contamination at the Hartford Site and all associated conditions that present or may present an imminent and substantial endangerment to health or the environment, pursuant to the terms of any further order of the Court.

8. Defendant shall coordinate and cooperate with the parties to the existing Administrative Order on Consent in performing activities required under this injunction.

9. All work required by this injunctive order shall be subject to U.S. EPA oversight and approval.

IT IS SO ORDERED.

Signed this 28th day of July, 2008.

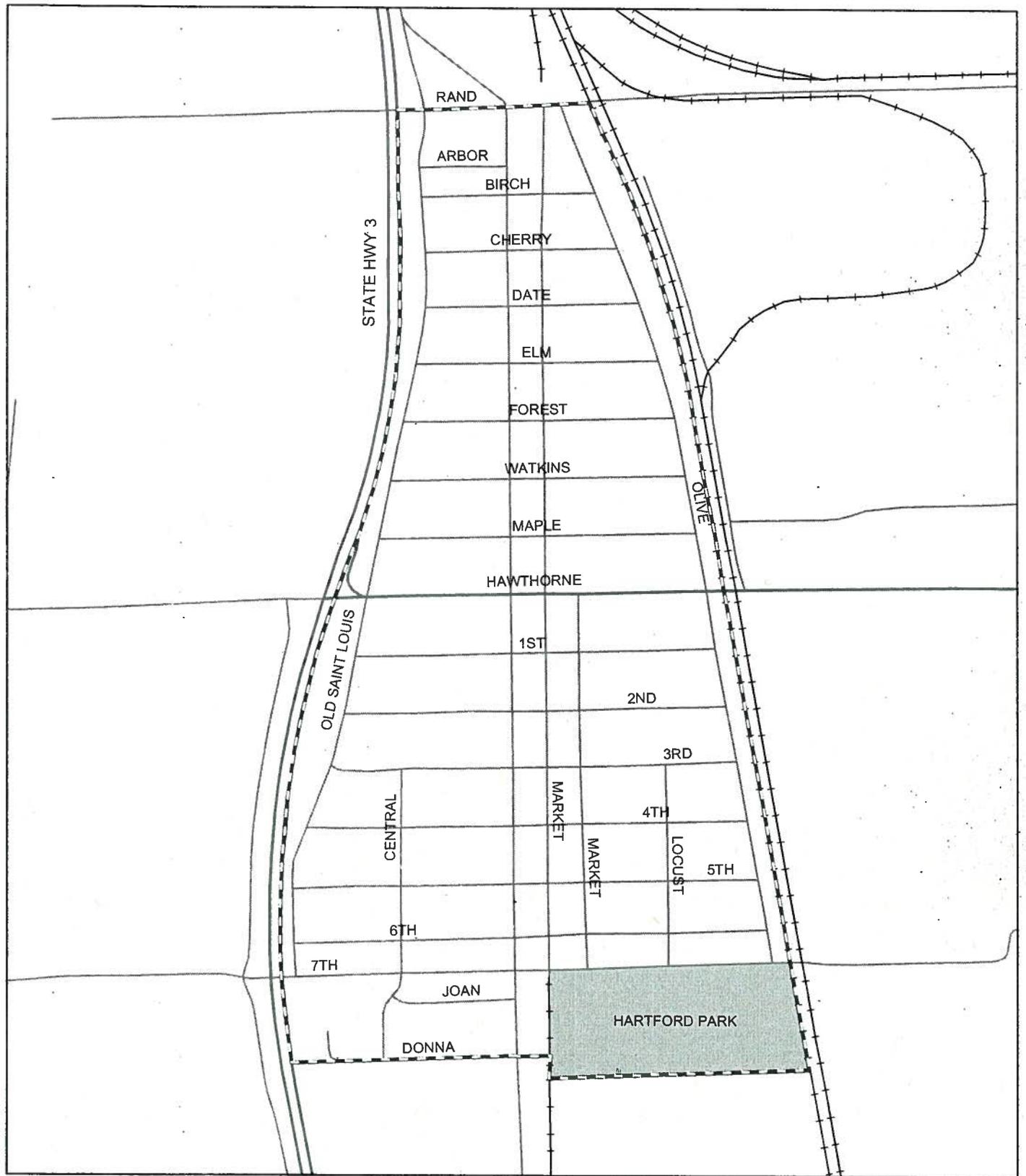
/s/ David B. Herndon

**Chief Judge
United States District Court
Southern District of Illinois**

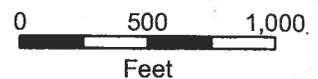
APPENDIX C

Site Map

Hartford Site Boundary

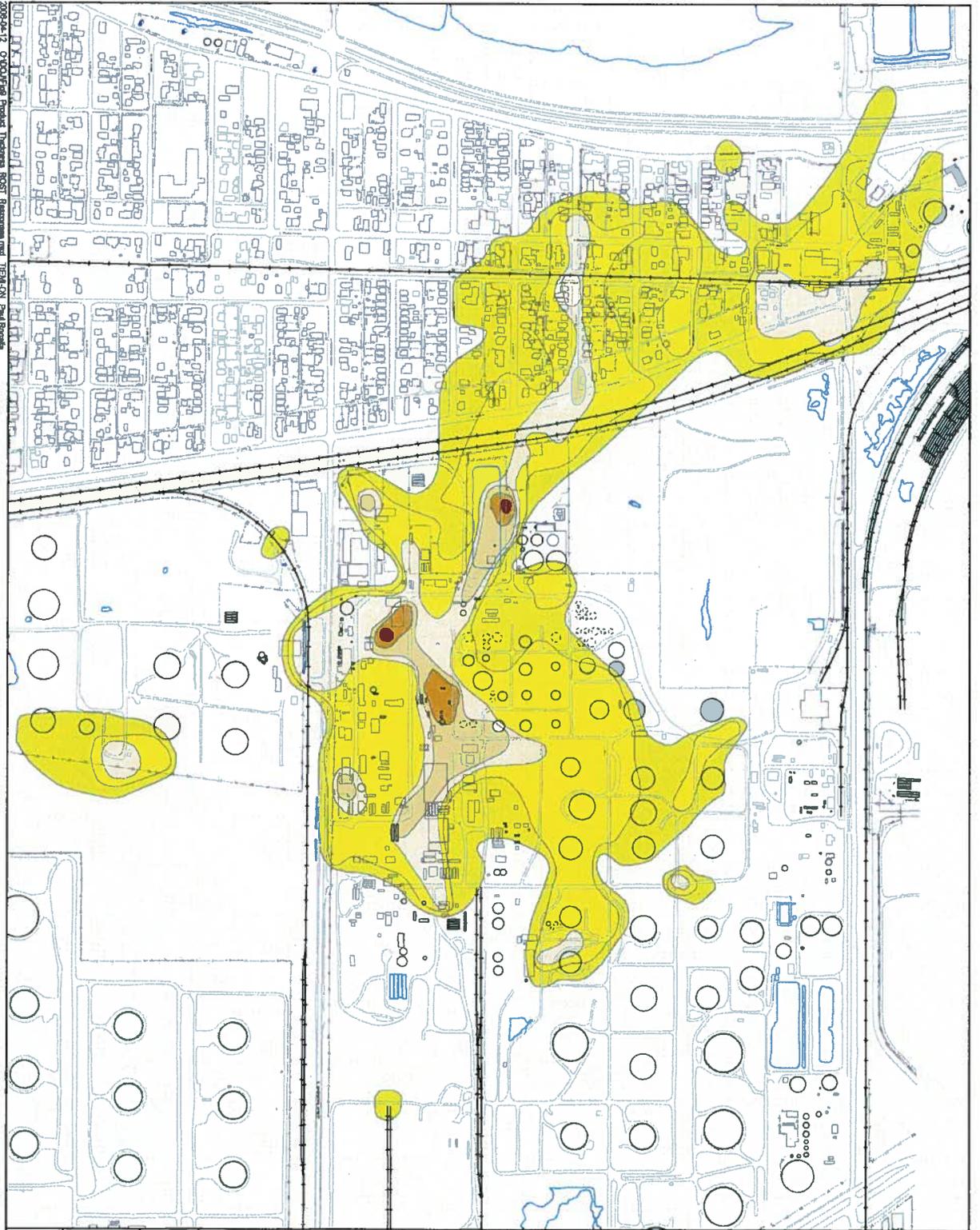


-  Site Boundary
-  Railroads



APPENDIX D

Estimated Extent of Free and Residual Phase Hydrocarbon Contamination



2008-04-12 0:00:00 Project: Hartford Area Hydrocarbon Plume Site - Final ROST Response and Remediation Plan

Legend

- 5 to <10 Feet of total ROST Response
- 10 to <20 Feet of total ROST Response
- 20 to <30 Feet of total ROST Response
- 30 to <40 Feet of total ROST Response
- 40 to <50 Feet of total ROST Response
- 50 to <80 Feet of total ROST Response
- Less Than

- < Road
- Railroad
- Fence
- Pond
- Aboveground Storage Tank (dashed where removed)
- Building

Sources: Clayton Group Services, Inc. 2006a, Clayton Group Services, Inc. 2004b, Clayton Group Services, Inc. 2006c.



HARTFORD AREA
HYDROCARBON PLUME SITE
HARTFORD, ILLINOIS

FIGURE 9
TOTAL PETROLEUM HYDROCARBON
ROST RESPONSE THICKNESS



APPENDIX E

November 5, 2008, Area A LNAPL Remedy Pilot Study Multiphase Extraction
(MPE) General Scope of Work

Area A LNAPL Remedy Pilot Study
Multiphase Extraction (MPE)
General Scope of Work
Village of Hartford
Hartford, Illinois

1.0 PURPOSE

The primary purpose of the Area A Pilot Test is to confirm or modify as warranted the site-wide design parameters outlined in the USEPA approved 90% design package. These design parameters are necessary for the site-wide implementation of the LNAPL remedy. The test design will focus on validating assumptions and establishing reasonable ranges for selected individual design parameters by replicating the full-scale LNAPL extraction processes over a limited area and time frame.

Parameters and assumptions to be evaluated or otherwise confirmed include:

- Technology selection (i.e., two-phase extraction versus low flow dual-phase extraction);
- Area formation, LNAPL and hydrogeologic characteristics (i.e., hydraulic conductivity, transmissivity of LNAPL and water, permeability, water table fluctuations);
- Effective operating ranges (i.e., optimal air flow, vacuum, water/product/vapor production, and stinger and/or pump placement and extraction rates);
- System influence (i.e., radius of influence, radius of capture, and zone of influence); and
- Well construction parameters.

To accomplish these objectives, a series of tests will be performed. The tests will be scheduled to limit the influence of one test on another due to changes in site conditions as a result of the pilot study (e.g., LNAPL saturation near wells.)

This document presents a general scope of work for the pilot tests. The scope is intended to be flexible to allow adjustments during testing to accommodate conditions encountered in the field. As such, durations and activities identified herein are guidelines that may be modified in the field in accordance with best professional judgment.

2.0 TECHNOLOGY DESCRIPTION

The two technologies to be tested are **two phase extraction (TPE)** and **low flow dual phase extraction (DPE)**. TPE consists of the simultaneous extraction of groundwater, LNAPL and vapor **via a single entrainment tube** (aka a stinger or drop tube) as a result of the application of vacuum to that entrainment tube. DPE consists of the simultaneous extraction of groundwater, LNAPL and vapor **via a submersible pump to extract liquids and an entrainment tube under vacuum to extract vapor**. Both techniques are types of **multiphase extraction (MPE)**, which is the general term for all forms of this technology that consist of vacuum enhanced removal of groundwater, LNAPL and vapor simultaneously (see attached technology diagram).

3.0 PILOT-TEST SETUP

The proposed LNAPL recovery system for Area A will be a MPE system that can be operated in either two-phase extraction (TPE) or low-flow dual phase extraction (DPE) mode. Currently, Area A facilities consist of one MPE zone with a subgrade vapor liquid separator (VLS), five extraction wells, and associated piping and other equipment. Multiple monitoring point wells are also present in Area A and will be utilized to obtain critical radius of influence (ROI) data during testing. The monitoring points have been spaced around MPE-A001 at varying distances and

directions in order to provide the required ROI data. MPE-A001 will therefore be the primary pilot test extraction well (see attached map).

The Area A subgrade VLS has been tied into the existing Hartford Working Group (HWG) mitigation soil vapor extraction (SVE) system. The SVE system will apply vacuum to the extraction well during the test and provide vapor abatement for vacuum induced vapor generation during the tests. As described in previous correspondence to the Village of Hartford (dated November 3, 2008 and copied to USEPA), recovered liquids will be separated from the associated vapor flow in the subgrade VLS. The liquids will be pumped from the subgrade VLS to temporary LNAPL/water separation and storage equipment located on Premcor property in the Village of Hartford. Further details regarding liquid handling and disposal/recycling are provided in the aforementioned correspondence.

During the TPE testing, well MPE-A001 will be equipped with a stinger pipe that can be placed such that it withdraws primarily LNAPL, with some associated water generation. The depth of the stinger can be adjusted, allowing flexibility to accommodate fluctuations in groundwater table elevation and to increase or decrease drawdown. The wellhead will be equipped with a valve to regulate dilution/assist air and with gauges for measuring both applied vacuum and casing vacuum.

During the DPE testing, well MPE-A001 will be setup in a similar manner, however a pneumatic pump will be placed in the well such that it can pump both LNAPL and water. The stinger will be raised and used to apply vacuum to the well primarily for vapor extraction. Depending upon field response and fluid levels, the stinger may also be lowered to extract LNAPL.

In addition to the MPE pilot testing, an aquifer pumping test will also be conducted using well MPE-A001 and the associated monitoring points. During aquifer testing a pump will be placed in well MPE-A001 and the well will be open to the atmosphere. The same monitoring point wells utilized to obtain ROI data from the TPE and DPE pilot tests will be utilized to obtain aquifer drawdown data during the aquifer testing.

Pressure transducers will be utilized, where possible, to obtain well liquid level and vacuum readings. If a transducer cannot be installed in a well, then manual data collection at that well will be performed to obtain liquid level and vacuum readings. In addition, periodic manual measurements of liquid levels and vacuum will be performed to verify transducer performance. Prior to initiation of the tests, the transducers will be tested side by side to verify acceptable calibration consistency.

4.0 TESTING PROTOCOL

Two types of LNAPL extraction pilot tests will be performed during the study including TPE and low-flow DPE, along with LNAPL bail down tests and aquifer tests. The technologies and tests are discussed below.

TWO-PHASE EXTRACTION

As noted previously, TPE consists of the simultaneous removal of groundwater, LNAPL, and soil vapor via the application of vacuum through an extraction tube, frequently referred to as a "drop tube" or "stinger." Because extraction occurs through a single stinger for a given well, there are several operating parameters that affect performance. Directly controllable parameters include:

- applied vacuum (pump, stinger, and well head vacuums);
- stinger depth;

- stinger diameter;
- stinger tip configuration; and
- supplemental atmospheric bleed air (used to modify the air/liquid ratio being extracted).

Indirectly controllable parameters include:

- water production rate;
- LNAPL production rate; and
- vapor production rate.

To evaluate well response (vapor and liquid recovery) under varying vacuum levels, a series of step tests (performed at MPE-A001) will be conducted during which the applied vacuum is modified in a step-wise, deliberate procedure. Generally the vacuum level applied to the wellhead is started at a low level and gradually increased as the test proceeds. The testing can be repeated for various stinger depths and supplemental bleed air configurations. The results will help identify the combination of operating configurations and parameters that support effective LNAPL extraction rates. Parameters to be varied during the single well TPE step test are outlined in Table 1.

Table 1. TPE Step Test Parameters

Parameter	Minimum	Maximum
Well Head Vacuum	10 in H2O	150 in H2O
Stinger Immersion % (in LNAPL)	50% (not < 0.5 ft.)	150% (not > 4 ft.)
Supplemental bleed air inflow	Closed	100% Open
Stinger Tip Configuration	Various	Various

NOTES: Stinger immersion percentage is the percentage of total LNAPL thickness measured in the well into which the stinger is inserted.

A limited range of combinations of these parameters will be implemented, and all indirectly controllable production parameters will be monitored. The Step Tests will initially be performed in the direction of increasing vacuum level and immersion depth, and upon reaching the maximum desired test level, will then be reversed in the decreasing direction to confirm test data is repeatable.

Following completion of the step test, an extended single well test at MPE-A001 will be conducted utilizing the optimal operating configuration identified during the step test as a starting point. The sustained, single well TPE test will run for up to 10 days to establish sustainable production level estimates for groundwater, LNAPL, and soil vapor. Surrounding monitoring point wells will be measured periodically to determine liquid drawdown and vacuum measurements. LNAPL / water / vapor production ratios will be monitored to determine production ratios and decay curves, if any are observed.

DUAL-PHASE EXTRACTION

Low-flow DPE consists of the simultaneous, but separate, extraction of groundwater, LNAPL, and soil vapor. Groundwater and LNAPL are typically removed via one or more submersible pumps while vapor is typically extracted by the application of vacuum at the well head. Previous low-flow DPE pilot tests conducted at the adjacent Premcor site demonstrated that optimal low-

flow DPE recovery rates range from approximately 6 to 8 gallons per minute of total liquids production (groundwater and LNAPL).

As a technology comparison with TPE, a sustained, single-well, low-flow DPE test will be performed at extraction well MPE-A001 following completion of the sustained, single well TPE test. A pneumatic pump will be utilized to extract groundwater and LNAPL during the DPE pilot test. The depth of the pump and the applied vacuum may be varied initially to identify optimal operating parameters. Surrounding monitoring point wells will be measured periodically to determine liquid drawdown and vacuum ROI measurements. LNAPL / water / vapor production ratios will be monitored to determine production ratios and decay curves, if any are observed.

The sustained, single-well, low-flow DPE test, like the TPE test, is scheduled to last for up to 10 days to obtain ROI data and to estimate sustainable production levels for groundwater, LNAPL, and soil vapor. These results will be compared to the results of the sustained TPE test to ensure that the technology selected is appropriate.

BAIL DOWN TESTING

Bail Down testing of selected Area A wells will be performed in order to evaluate LNAPL Transmissivity (LNAPL T) values in between each test to provide a baseline for comparability of results. Due to the relatively high LNAPL T values for these wells, a pump rather than a bailer will be utilized to extract LNAPL. LNAPL recharge values will be obtained manually utilizing an electronic interface probe (EIP). The recharge data will be analyzed to calculate LNAPL T values for each well tested.

AQUIFER TESTING

Drawdown aquifer testing will be performed from well MPE-A001 in order to evaluate local aquifer physical characteristics (e.g., hydraulic conductivity) and potential anisotropy in the shallow Main Sand. A submersible pump will be installed in MPE-A001 in order to perform this test. Adjacent monitoring point wells will be monitored to obtain drawdown values resulting from the test. Barometric pressure fluctuations and, to the extent determinable, local water table fluctuations resulting from natural and anthropogenic forces will be measured to isolate pumping induced drawdown values. The data will be analyzed utilizing industry standard pumping test analytical methods appropriate for this aquifer.

SEQUENCING

Single well TPE step and sustained tests will be conducted initially, followed by the single well low-flow DPE test, and finally, the aquifer test. An LNAPL bail down test, used to determine the LNAPL transmissivity, will be conducted initially and after each test to evaluate test impact on LNAPL recoverability in the vicinity of the test well and to evaluate comparability of the results of the various tests.

The TPE step test is scheduled to last for up to three days. The TPE and low flow DPE tests will each last for up to 10 days (total of up to 20 days for both). The aquifer test will be performed for a minimum of 24 hours up to a maximum of 3 days.

5.0 DATA COLLECTION AND STORAGE

The pilot testing described herein will generate a significant amount of data. As indicated previously, Level TROLL® and BaroTROLL® transducers will be installed in extraction and observation wells. The transducers are capable of recording liquid levels and pressure/vacuum readings inside the wells. Wells will be manually gauged at least once per day to validate the

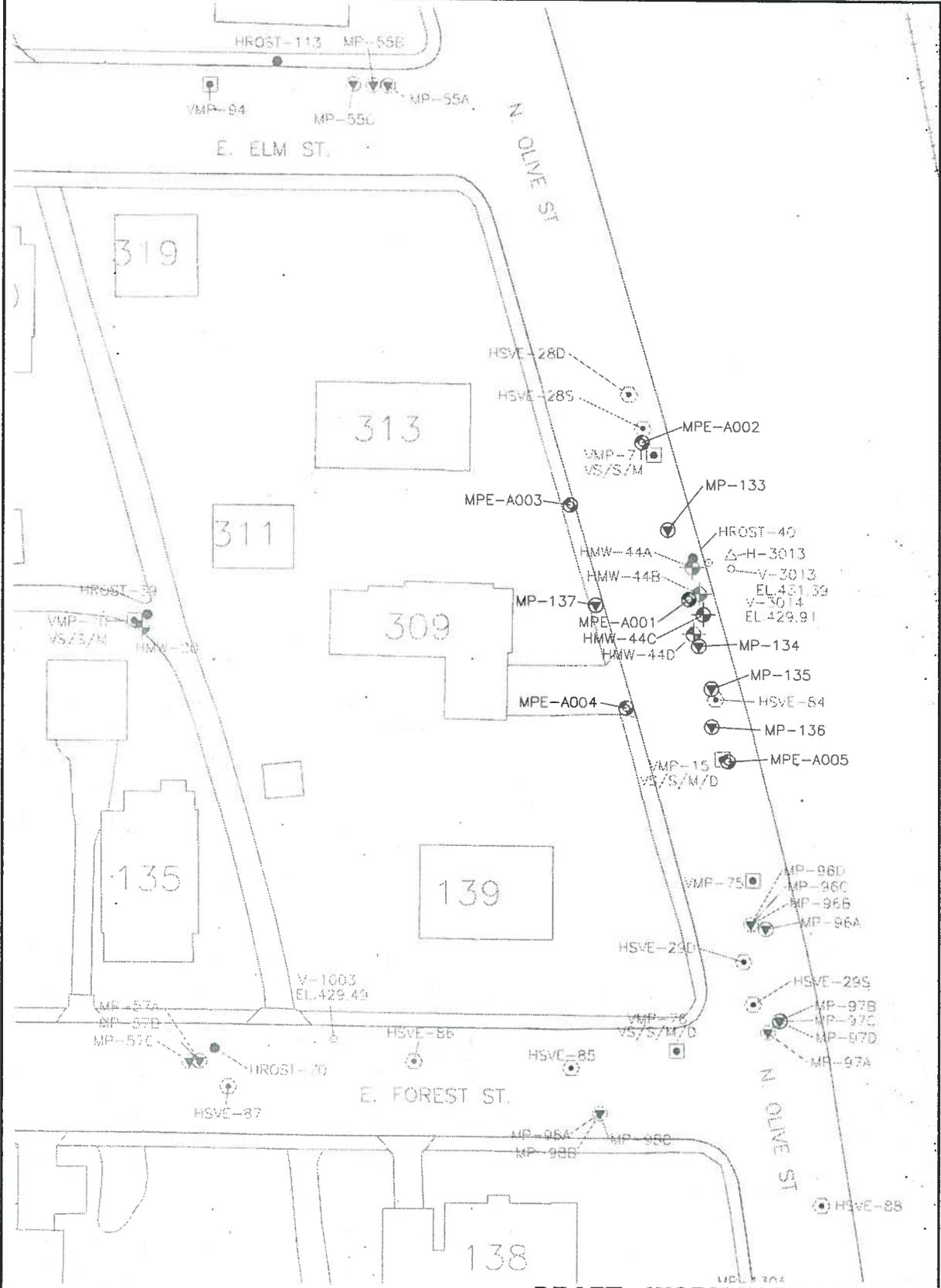
transducer data. Several manual field measurements will also be recorded including measurements taken at the well heads, at manifold vaults, and at system equipment. The variables recorded during the low-flow DPE events vary somewhat from those recorded during TPE events.

Manual data will be collected by field personnel and logged on forms outlining the data to be collected and at what frequency. Manual data will be collected at well heads, manifold vaults, the subgrade vapor/liquid separator vault, and at various pieces of downstream system equipment. Electronic data will be logged automatically from various liquid level and pressure transducers placed inside the extraction and observation wells. Once logged, the data will be stored temporarily in the equipment dataloggers and downloaded periodically to a laptop computer or handheld recorder in the field.

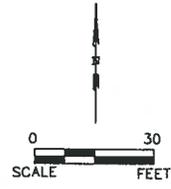
6.0 DATA ANALYSIS

Following completion of the testing, the data will be analyzed to remove external influences such as barometric pressure and local/regional aquifer level variations that may result from either natural or anthropogenic water table fluctuations. Subsequently, a variety of analyses will be performed, including (but not necessarily limited to):

1. Aquifer pumping test analysis for aquifer characteristics
2. Sustainable LNAPL / Water / Vapor production ratios and decay curves
3. Radius of Influence from the TPE and low flow DPE tests to include liquid drawdown and vacuum influence
4. Analysis of Radius of Influence (ROI), Radius of Capture (ROC), and associated Zone of Influence (ZOI) for the two technologies
5. Analysis of LNAPL Transmissivities
6. Reporting



- LEGEND**
- MONITORING POINTS - MANUALLY GAUGED WEEKLY
 - ⊕ MULTIPHASE EXTRACTION WELLS - MANUALLY GAUGED WEEKLY
 - ⊕ GROUNDWATER MONITORING WELLS - MANUALLY GAUGED WEEKLY
 - ⊕ GROUNDWATER MONITORING WELLS - TRANSDUCER DOWNLOADED MONTHLY



DRAFT - WORK IN PROGRESS

HARTFORD WORKING GROUP HARTFORD, IL		PROJECT NO. 21561955
URS		
DRN. BY:irm 10/28/08 DSGN. BY:ras CHKD. BY:bh	Gauging Schematic	FIG. NO. 1

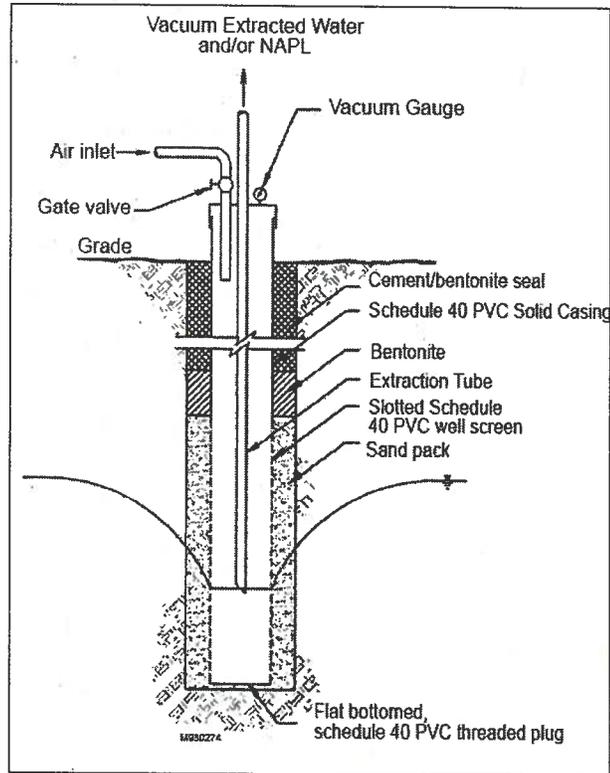


Figure 4-2. Two-Phase Extraction Well. (After EPA 1995)

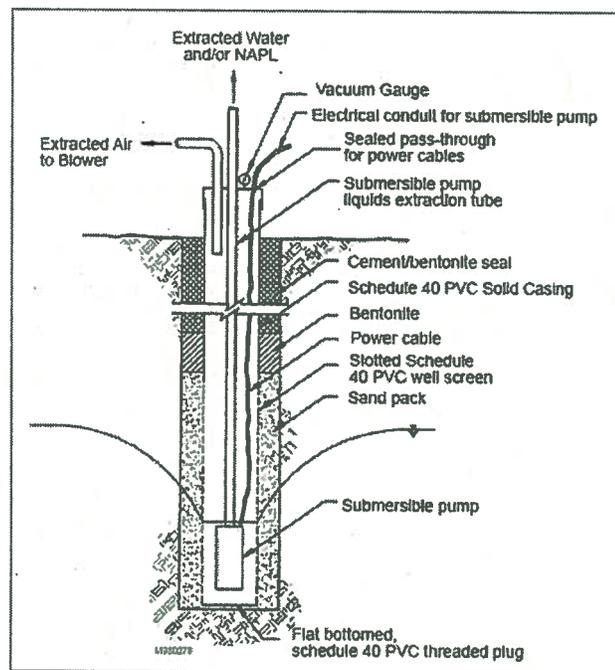


Figure 4-1. Dual-Phase Extraction Well. (After EPA 1995)

APPENDIX F

Index to Administrative Record



U.S. ENVIRONMENTAL PROTECTION AGENCY
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EPA Region 5 Records Ctr.



205344

ADMINISTRATIVE RECORD
FOR
HARTFORD AREA HYDROCARBON PLUME SITE
HARTFORD, MADISON COUNTY, ILLINOIS

ORIGINAL
MARCH 15, 2004

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
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3	04/28/03	Clayton Group Services, Inc.	The Premcor Refining Group, Inc.	Current Conditions Report for the Premcor Refining Group-Hartford Facility Volume 2 (Appendices J2-O)	588
4	04/28/03	Clayton Group Services, Inc.	The Premcor Refining Group, Inc.	Current Conditions Report for the Premcor Refining Group-Hartford Facility Volume 3 (Appendices P-U)	706
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6	05/19/03	Illinois Department of Public Health/ATSDR	U.S. EPA	Public Health Assessment: Response to Vapors in Hartford Homes	34
7	11/11/03	Stice, D., Sinclair Oil Corporation	Barwick, B., U.S. EPA	Requested Sinclair Oil Corporation Hartford Pipe- line Documents w/Cover Letter	148
8	00/00/00	Chounowsky, C., Illinois EPA	File	Presentation Slides for the Hartford Area Hydro- carbon Plume Site	23
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HARTFORD AREA HYDROCARBON PLUME
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10	03/15/04	Faryan, S., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Determination of Threat to Public Health or Welfare or the Environment at the Hartford Area Hydrocarbon Plume Site in Hartford, Illinois in the County of Madison (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED)	18

U. S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

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ADMINISTRATIVE RECORD
FOR
HARTFORD AREA HYDROCARBON PLUME SITE
HARTFORD, MADISON COUNTY, ILLINOIS

UPDATE #1
MAY 20, 2004

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2	11/21/03	Nienkerk, M., Clayton Group Services	Turner, K., U.S. EP	Letter re: Installation of the Sentinel Wells at the Hartford Area Hydro- carbon Plume Site w/At- tachments	5
3	12/10/03	Clayton Group Services	U.S. EPA	Vapor Control System Eval- uation Report, Village of Hartford, for the Hartford Area Hydrocarbon Plume Site	44
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5	01/07/04	Clayton Group Services	U.S. EPA	Investigation Plan to Define the Extent of Free Phase and Dissolved Phase Hydrocarbons in Village of Hartford, Illinois, Volume II: Appendix C	377
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7	03/04/04	Clayton Group Services	U.S. EPA	Detonation Flame Arrestor Element Replacement & Soil Vapor Extraction Test for the Hartford Area Hydro- carbon Plume Site	64
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REMOVAL ACTION

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HARTFORD AREA HYDROCARBON PLUME SITE
HARTFORD, MADISON COUNTY, ILLINOIS

UPDATE #2
JUNE 29, 2004

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4	03/25/04	Hartford Resident	U.S. EPA	EPA Public Comment Sheet re: Legal Agreement for the Hartford Area Hydro- carbon Plume Site w/At- tachments	21
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6	04/07/04	Kelly, J., Attorney	Joyce, M., U.S. EPA	Letter re: Comments on the AOC for the Hartford Area Hydrocarbon Plume Site w/Attachments	10
7	06/17/04	Guerriero, M., U.S. EPA	Addressees	U.S. EPA's Response to Comments on the AOC for the Hartford Area Hydro- carbon Plume Site w/Cover Letter	12
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FOR
HARTFORD AREA HYDROCARBON PLUME SITE
HARTFORD, MADISON COUNTY, ILLINOIS

UPDATE #3
FEBRUARY 2, 2007

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
HARTFORD AREA HYDROCARBON PLUME SITE
HARTFORD, MADISON COUNTY, ILLINOIS

EPA Region 5 Records Ctr.



269452

UPDATE #4
APRIL 13, 2007

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
HARTFORD AREA HYDROCARBON PLUME SITE
HARTFORD, MADISON COUNTY, ILLINOIS

UPDATE #5
JULY 14, 2010

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7	02/26/08	Turner, K., U.S. EPA	Veenstra, R., URS Corporation	E-Mail Transmission re: HWG LNAPL Area A Well Locations/Plan Review w/ Reply History	

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16	03/26/09	Schilling, R. & R. Mooshegian, AECOM Environment	Faryan, S., U.S. EPA	Letter re: Draft Event- Based Monitoring Plan for the Hartford Area Hydro- carbon Plume Site	
17	03/26/09	Turner, K., U.S. EPA	Salhotra, A., RAM Group	E-Mail Transmission re: Quality Assurance Project Plan	
18	04/02/09	Turner, K., U.S. EPA	Salhotra, A., RAM Group	E-Mail Transmission re: OSHA 1910.120 Requirements	
19	04/15/09	URS Corporation	U.S. EPA	Quarterly Groundwater Monitoring Summary Report for the 1 st Quarter January 2009 at the Hartford Area Hydrocarbon Plume Site	
20	06/18/09	Turner, K., U.S. EPA	Salhotra, A., RAM Group	E-Mail Transmission re: Request for Ground Water Modifications	
21	07/02/09	Turner, K., U.S. EPA	Salhotra, A., RAM Group	E-Mail Transmission re: Ground Water Sampling and Analysis Plan	
22	11/06/09	Salhotra, A., RAM Group	Turner, K., U.S. EPA	E-Mail Transmission re: Screening Data of Novem- ber 6, 2009 and Response to E-Mails w/ Reply History	
23	11/12/09	Turner, K., U.S. EPA	Salhotra, A., RAM Group	E-Mail Transmission re: Approval to Use EcoVac System to Remove Vapors Around 119 W Date w/ Reply History	
24	04/12/10	Salhotra, A., RAM Group	Turner, K., U.S. EPA	Letter re: LNAPL Recovery in Area A	
25	04/28/10	Turner, K., U.S. EPA	Salhotra, A., RAM Group	E-Mail Transmission re: Revised Skimmer Work Plan w/ Reply History	
26	04/29/10	Turner, K., U.S. EPA	Salhotra, A., RAM Group	E-Mail Transmission re: EBMP Data	
27	06/15/10	Salhotra, A., RAM Group	Turner, K., U.S. EPA	E-Mail Transmission re: EBMP and Method ASTM D1946 w/ Reply History	